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ABSTRACT

These instructional materials were developed as a supplement to the "Alaska State Model Curriculum in Renewable Natural Resources/Agriculture." The topics covered focus on competencies from the curriculum for which materials were not readily available to Alaskan teachers and provide information that may not be sufficiently covered by existing curricula. Each unit begins with a teacher's page that includes the competency and tasks from the curriculum. An overview, suggested learning activities, and resources for more information on each topic are also provided. The resources section suggests some materials available for each area. Topics covered include the following: skills for self-sufficiency; means and methods of self-sufficiency hunting, trapping, gathering, fishing, and gardening; shelter construction for self-sufficiency; using transportation for self-sufficiency (dog teams, boat construction, sled construction); manufacturing crafts for sale; using skills and equipment for self-sufficiency; managing and protecting self-sufficiency resources; Alaska's natives and self-sufficiency; land ownership and management; the importance of Alaska's self-sufficiency resources; and competing uses of resources. (KC)

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Self-Sufficiency
Resources

State of Alaska
Steve Cowper, Governor

Developed by the:
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Office of Adult and Vocational Education

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Alaska Department of Education 1989

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Foreword

These instructional materials were developed as a supplement to the Alaska State Model Curriculum in Renewable Natural Resources/Agriculture. The topics covered focus on competencies from the curriculum for which materials were not readily available to Alaskan teachers, and provide information which may not be sufficiently covered by existing curricula. These instructional materials reordered some of the units, competencies, and tasks found in the curriculum. Compiling these materials allowed for more in-depth review of these fields which resulted in some combined units.

Each unit begins with a teacher page which includes the competency and tasks from the Curriculum. An overview, suggested learning activities, and resources for more information on each topic are also provided. The Resources section suggests some materials available for each area. Teachers and students should also contact their local and state libraries, and government agencies which often have resource libraries from which a wealth of materials can be obtained. A number of Cooperative Extension publications are referred to in this publication. Some of these publications may have been revised to meet the current conditions or deleted if the materials are no longer appropriate. The inventories of some other publications are low, and may or may not be reprinted when the supply is exhausted.

This document should not be considered comprehensive. For example, how could one be comprehensive about self-sufficiency in such a widely diverse state? As was explained in the Foreword to the state model curriculum, the term "Self-Sufficiency" was used in lieu of subsistence. Subsistence has been defined as "traditional." Some self-sufficient natural resource users in Alaska could be inventing their own more efficient methods of harvest. Hence, the term "Self-Sufficiency" was substituted. Self-sufficiency is seen as incorporating subsistence.

Many activities refer to "Project Wild," a heralded program created by a consortium of western states. This project is available to Alaskan teachers through the Project Wild Coordinator at the Alaska Department of Fish and Game. *In order to obtain the materials, teachers must go through the Project Wild orientation class.* Contact the Project Wild Coordinator at the Alaska Department of Fish and Game, Box 2-3000, Juneau, AK 99811, or call (907) 465-4190 for details.

It is hoped that these materials will offer ideas to vocational instructors and information for students for vocational natural resource courses in Alaska. It should be noted that a number of the competencies and tasks explained in these materials have an accompanying risk. Instructors should contact sources such as the Cooperative Extension Office, U.S. Coast Guard Auxiliary or Fish and Wildlife Protection before undertaking any of these inherently hazardous tasks.

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Finally, **Verdell Jackson**, Curriculum Specialist for the Office of Adult and Vocational Education must be recognized for supervising the development of this publication and ensuring that it provides Alaskan students and instructors with instructional materials of the highest quality.

Karen Ryals
Administrator
Office of Adult and Vocational Education
Alaska Department of Education
January 1989

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Instructional Materials for Self-Sufficiency

Work with the Resource

Skills for Self-Sufficiency
Teacher Page

Competency: **Use skills for self-sufficiency**

Tasks: Explain tasks in producing food and fiber for personal use including:

- a. hunting
- b. fishing
- c. gathering
- d. preparing

Explain traditional roles of gathering in Native Alaskan cultures

Identify traditional roles of men and women in self-sufficiency in Native Alaskan cultures

Explain ways to barter or trade resources

Identify work as:

- a. animal handler
- b. boat builder
- c. carver
- d. doll maker
- e. farmer/gardener
- f. fisher
- g. food preparer
- h. gatherer
- i. house builder
- j. hunter
- k. skin sewer
- l. tanner
- m. trapper
- n. weaver

Introduction

In 1986 the Alaska State Legislature stated that game boards shall distinguish among *subsistence* users by applying the following criteria: 1) customary and direct dependence on the fish stock or game population as the mainstay of livelihood; 2) local residency; and 3) availability of alternative resources. Subsistence is a controversial idea. As explained in the foreword to the "Renewable Natural Resources/Agriculture Curriculum, "it is not our purpose here to address the controversies regarding subsistence, but to present the various skills necessary to live a 'subsistence lifestyle' in Alaska. To incorporate those skills not necessarily historical, but which can be termed a 'self-sufficient' lifestyle, we will for the purposes of this curriculum use the term 'self-sufficiency' in place of subsistence. Subsistence is itself not taught in the schools--it is handed down from generation to generation. Indeed, in Alaska, the issue of subsistence has been one of the more hotly debated issues of recent time.

Overview

Subsistence is not an area in which one would look for a job. The truth is, however, that because of the bounty of Alaska's natural resources, a larger percentage of the population derives their sustenance from the land, air, sea, and streams than in any other state.

Suggested Learning Activities

1. Brainstorm tasks involved in a self-sufficient lifestyle.
2. Invite local Native elders to class to discuss the traditional division of labor in gathering and other self-sufficiency activities.
3. Invite local subsistence users to school to display items prepared for self-sufficiency use including smoked or dried salmon, venison, berries in oil, edible plants and other foods, handmade boats, dolls, carvings, basketry, handmade tools, handmade clothing from local fibers and skins, etc.
4. Visit local people involved in self-sufficiency activities. Observe them and interview them.
5. Contact the Alaska State Museum to obtain traveling multi-media kits and publications on the household duties of Tlingit women and on the Eskimo child. Kits contain a variety of hands-on materials and activities suitable for all grade levels.

Resources

Alaska State Museum, 395 Whittier Street, Juneau, Ak. 99801. *Excellent multi-media kits and publications available on a variety of topics, with materials and activities suitable for all grade levels. 465-2901.*

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802. *The Subsistence Division publishes a number of papers annually. These papers, while technical in nature, help in understanding particular subsistence uses.*

Nunam Kitlutsisti, P.O. Box 2068, Bethel, AK 99559 (907) 543-2856-*The environmental and research arm of the Association of Village Council Presidents, the official representative body for the fifty-six Native villages of Alaska's Yukon-Kuskokwim Delta region.*

Rural Alaska Resources Association, c/o RURALCAP, P.O. Box 200908, Anchorage, AK 99520. *Newsletter dealing with subsistence issues.*

Books and Magazines:

Alaska Native Arts and Crafts, Alaska Geographic Society, 137 East Seventh Avenue, Anchorage, AK 99501 (907) 563-5100

Boy Scouts of America, Direct Mail Division, P.O. Box 909 Pineville, NC 28134-0909. *The Merit Badge Library offers publications specific to many areas related to wildlife. Sample topics include Backpacking, Camping, Environmental Science, Fish and Wildlife Management, General Science, Insect Study, Plant Science and Veterinary Science. Write for complete list. Booklets $1.25 each. Also, the Fieldbook is an excellent resource.*

Field Guide to Edible Wild Plants, Stackpole Books, Harrisburg, PA, 1974.

Tom Brown's Field Guide To Living With The Earth ,Tom Brown Jr With Brandt Morgan Illustrated By Heather Bolyn And Trip Becker, Berkley Trade Publications Edition, New York Berkley , Books,1984. *Tom Brown is a highly-regarded woodsperson.*

Living By the Seasons, Juneau School District Indian Studies Program, 10014 Crazy Horse Drive, Juneau, AK 99801. (907) 586-2303.

"The Role of Fisheries in the Alaska Economy," Hartman, Baker, Dean, Mills, and Wolfe, from Alaska Fish and Game Magazine, January-February, 1988.

Root, Stem and Leaf: Wild Vegetables of Southeast Alaska, by Glen Ray, South East Regional Resource Center, 210 Ferry Way, Juneau, AK 99801.

Spruce Root Basketry of the Alaska Tlingit, Frances Paul, Education Division, United States Indian Service, 1944. *An authoritative and wonderful book. Most likely out of print. A copy is available from the state library in Juneau. 80 pages.*

"Subsistence, What Is It? How Does It Work?" Alaska Department of Fish and Game, pamphlet, 1984.

Wild Edible and Poisonous Plants of Alaska, Cooperative Extension Service, University of Alaska, 1976.

"The Way We Live," four 15-minute VHS videos, 1981. *Available through the Alaska State Film Library or from KYUK Video Productions, Pouch 468, Bethel, AK 99559 (907) 543-3131. Shows several aspects of traditional Yup'ik Eskimo culture: dog mushing; ice fishing for black fish; a seal party; and storytelling using the dance stick.*

Skills for Self-Sufficiency

How does the Boards of Fisheries and Game define subsistence?

Self-sufficiency means making your own way with your own resources. In Alaska that self-sufficient lifestyle often includes *subsistence*. Subsistence may be thought of as a subset of self-sufficiency. Some degree of self-sufficiency is available to everyone. Subsistence has long been important in the Alaskan lifestyle. Not only have Native people depended on the land for sustenance for eons, many Alaskan Non-Natives participate in the subsistence lifestyle. So how is subsistence defined? In 1986 the Alaska State Legislature defined subsistence uses as the

> *"noncommercial, customary and traditional uses of wild, renewable resources by a resident domiciled in a rural area of the state for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation, for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter, or sharing for personal or family consumption; in this paragraph, "family" means persons related by blood, marriage, or adoption, and a person living in the household on a permanent basis..."*

The Alaska Boards of Fisheries and Game implement the law. They provide subsistence fishing and hunting opportunities by regulation, as required by the law. No priority is involved in simply authorizing subsistence uses. Only in a situation of relative resource shortage does priority come into plan. If this occurs, and it is necessary to restrict harvest, subsistence uses will be the last to be cut back. Of course, no use–including subsistence may be allowed to jeopardize fish and game resources. The state constitution, statutes, and regulations all mandate that sustained yield is the paramount concern in managing fish and game.

The boards evaluate whether a use of resources is a subsistence use by applying these criteria:

- a long-term, consistent pattern of use
- a use pattern recurring in specific seasons of each year
- methods and means of harvest which are efficient and economic in terms of effort and cost
- use of traditional means of handling, preparing, preserving, and storing fish or game
- a use pattern which includes the handing down of knowledge of fishing or hunting skills, values and lore from generation to generation
- a use pattern in which the hunting and fishing effort and products of that effort are shared among others in the community
- a use pattern which includes reliance for subsistence purposes upon a wide diversity of resources and provides substantial economic, cultural, social, and nutritional elements of the subsistence user's life" ("Subsistence: What is it? How Does it Work?")

Self-sufficiency is usually defined in four ways:

a. hunting
b. fishing
c. gathering
d. preparing

These are not the only means of self-sufficiency. Building a family house, providing family transportation, hauling water or constructing plumbing or electrical systems are all self-sufficient activities.

Since the time of the above regulations, the Alaska Supreme Court ruled that use of the eight criteria above was not legal. In *Madison vs. ADF & G (1985),* the Supreme Court stated that "for a particular hunt, when all residents who want to cannot be allowed to hunt, to protect the resource...three statutory criteria must be employed to determine who may hunt. The criteria are:

1) customary and direct dependence upon the resource as the mainstay of one's livelihood;
2) local residency
3) availability of alternative resources.

This case caused the Alaska Department of Fish and Game to issue separate rules and regulations for subsistence users.

How are gathering activities traditionally divided among members of Native Alaskan cultures?

Native and Non-Native people who rely on self-sufficiency in the state often supplement their diets with gathered foodstuffs. Gathering has supplemented the Alaskan diet for centuries. In Giddings' book Forest Eskimos in 1880 he noted:

> "While some members of the family mend nets, others take digging sticks and hunt for polygonum roots and tubers along the banks of the river and inland on the margins of ponds. Willow leaves are gathered for food early in the season, as is also wild rhubarb and a variety of other green plants. Some greens

> are eaten raw with fish oil, while others are boiled into the stew with fish or meat. (Giddings, 1956: 10)
>
> "August is…berry-picking time. The women take every opportunity to go out on the slopes of the hills with birch bark baskets and beating sticks to secure quantities of blueberries, some of which can be preserved in oil, some eaten at once, and some allowed to half dry for winter use. Other berries, such as cranberries, black and red currants, and yellow cloudberries, are eaten as they ripen but are seldom kept for any length of time." (Giddings, 1956: 17)

Many Alaskans enjoy picking wild berries. Berries are common throughout the state, particularly in the treeless tundra areas of the Interior and North Slope. Often those who pick berries may combine the activity with another such as fishing.

Courtesy of Cooperative Extension Agency

What are the traditional roles of men and women in self-sufficiency in Native Alaskan cultures?

In many Alaska Native cultures berry picking or other gathering activities were relegated to women. As noted in KUUVANMIIT SUBSISTENCE: Traditional Eskimo Life in the Latter Twentieth Century, in the mid 1970s along the Kobuk River, it was the women who picked the berries.

Historically, crafts were sometimes divided along the lines of sex. As Alaska Native Arts and Crafts notes, "just as ivory carving was once a pursuit reserved completely for men, the sewing of skin garments was and still is done primarily by women. Although men hunt or trap most of the game used to make clothing, women skin and dress the animals and cut and process the hides. "Some craft making was historically completed by either sex. " Doll making, an Eskimo art form at least 2,000 years old, is often the shared activity of men and women," the authors note. (Alaska Native Arts and Crafts, p. 66 and 71)

Frances Paul, in the book Spruce Root Basketry of the Alaska Tlingit noted in 1944 of basketmaking that, "in the old days the entire business from the first selection of materials to the finished product, was women's work." (Spruce Root Basketry of the Alaska Tlingit, p. 13)

The Alaska Department of Fish and Game notes that in rural Alaska many "primary social roles revolve around subsistence: commonly harvesting by males, processing by females, support roles for children and the very elderly." ("The Role of Fisheries in the Alaska Economy," p. 5)

Some traditional beliefs of the roles of men and women might include having men or women present at events reserved just for that sex. For example, Athabascan lore states that "any woman on the ice during eeling time [when eels are taken for subsistence purposes] is bad luck. And [according to author George Bryson] if a *group of women* were ever to step out on the ice, the cumulative effect of their feminine presence probably would drive the eels crazy–sending them scattering off in a thousand directions never to be seen again." (The Night of the Eels, p. F-15)

What are some ways to barter or trade self-sufficiency resources?

It is important to recognize that the law addresses bartering or trade of resources taken for subsistence:

> *"a use pattern in which the hunting or fishing effort or the products of that effort are distributed or shared among others within a definable community of persons, including customary trade, barter, sharing, and gift-giving; customary trade may include limited exchanges for cash, but does not include significant commercial enterprises; a community may include specific villages or towns, with a historical preponderance of subsistence users, and encompasses individuals, families, or groups who in fact meet the criteria described in this subsection..."*

So, barter and trade are allowed for personal or family consumption.

How can I be self-sufficient in Alaska?

There are many ways to be self-sufficient in Alaska. You can build your own house. You can hunt your own food. You can preserve your own berries or make yourself a pair of moccasins.

If self-sufficiency was defined as professions, those professions might be:

animal handler
boat builder
carver
doll maker
farmer/gardener
fisher
food preparer
gatherer
house builder
hunter
skin sewer
tanner
trapper
weaver

Obviously, self-sufficiency is a wide-ranging profession. And, it is a viable contributor to the Alaskan economy. What would be the shape of the Alaskan economy if everyone had to buy their foodstuffs from the supermarket, if every job was indoors, in an office?

[1] ***SUBSISTENCE: WHAT IS IT? HOW DOES IT WORK?,*** pamphlet, Alaska Department of Fish & Game, Division of Subsistence, 1984.

Use the Resource

Means and Methods of Self-Sufficiency Hunting

Teacher Page

Competency: **Understand means and methods of self-sufficiency hunting in Alaska**

Tasks:
Compare traditional versus contemporary means of hunting
Identify long term impacts of hunting on the overall resource base
Explain hunting techniques by species
Appropriately choose weapons
Safely handle weapons
Practice safe hunting techniques
Explain and practice hunting ethics

Introduction

Hunting is a major industry in Alaska as a sport, with numerous sporting goods stores, hardware stores and gun supply shops benefitting. It is major in terms of self-sufficiency and subsistence, with thousands of Alaskans deriving a good part of their foods via hunting. Few other places in the world have such a large portion of the population so deeply rooted in the resource.

Overview

No one knows just what is going to happen to hunting in Alaska. Hopefully, the game will remain andsubsistence will continue to be a viable lifestyle. Some changes have taken place. Once-plentiful game is in some places rare, while those who historically were able to take game when they needed it may find themselves restricted by regulations. Probably most would agree that the self-sufficient lifestyle is here to stay in Alaska, and that hunting will not diminish in importance.

Suggested Learning Activities

1. Invite an expert on traditional hunting to class to discuss the difference between traditional and contemporary hunting methods.
2. Invite game biologists to class to discuss the impacts of sport and subsistence hunting on the wildlife resource.
3. Invite representatives from local sportsmens groups to discuss different techniques for hunting different species and to talk about which guns are most appropriate for different species and types of hunt.
4. Invite a representative from the NRA to class to demonstrate how to clean and safely care for weapons.
5. Dissemble , clean, reassemble a shotgun, rifle, handgun, following safety rules listed on page
6. Role-play firearm safety measures.
7. Take field trips to shooting range and practice firing.
8. Project Wild, "The Hunters," p. 157
9. Debate the ethics of hunting. Is it right to kill for sport? For trophies? How much of the kill should a hunter use?
10. See the Alaska State Museum multi-media kits and publications on Athabaskan caribou and Tlingit fishing and hunting for hands-on materials and a variety of activities suitable for all grade levels.

Resources

Alaska State Museum, 395 Whittier Street, Juneau, Ak. 99801. *Excellent multi-media kits and publications available on a variety of topics , with materials and activities suitable for all grade levels. 465-2901.*

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701 *Excellent publications include "Alaska's Game is Good Food!", "Tanning at Home" and other publications*

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802.

National Rifle Association, 1600 Rhode Island Avenue, N.W., Washington, DC 20036 *The manual Basic Hunter's Guide is an excellent publication concerning the how-tos of firearms and introductory hunting. Obtain copies from NRA Sales, P.O. Box 96031, Washington, DC 20090-6031. Quotations used by permission, National Rifle Association.*

Nunam Kitlutsisti, P.O. Box 2068, Bethel, AK 99559 (907) 543-2856-*The environmental and research arm of the Association of Village Council Presidents, the official representative body for the fifty-six Native villages of Alaska's Yukon-Kuskokwim Delta region.*

Rural Alaska Resources Association, c/o RURALCAP, P.O. Box 200908, Anchorage, AK 99520--*Newsletter dealing with subsistence issues.*

"The Night of the Eels," by George Bryson, Anchorage Daily News, December 6, 1980, pp. F-14 to F-17)

Means and Methods of Self-Sufficiency Hunting

How do traditional methods of hunting compare with what we do today?

The answer to this question depends on how far you want to go back in time. When we compare ways of making a living, things have changed quite a bit over time. Depending on the location in Alaska, it wasn't very long ago that groups of people were hunting without the use of firearms. They often set out hunting without modern modes of transportation–aircraft, snow machine, ATVs. The skill of the person might have had a lot more to do with hunting success than the capabilities of their equipment. Though Native Alaskans had, through trading, some contact with firearms prior to the arrival of the Euro-Americans, most of their hunting involved wooden and skin snares, traps, bows, arrows, and stone-tipped spears. Some metal was used, though in its natural state. For most, hunting involved stalking on foot and killing with arrow or spear.

What does my hunting do to the overall resource?

Every human being needs to think about his/her impact on the overall resources. There are several questions in this regard–what is the short-term impact and what is the long-term impact. Short-term impacts might be negligible. You might be removing animals which could, in the face of a long winter ahead, become surplus. Long-term impacts could involve a reduction in wildlife populations. Humans have the capability to reduce wildlife populations–witness the buffalo on the Great Plains. Modern management, however, has in many places in the U.S. allowed wildlife populations to increase. In some areas hunters, by reducing numbers, keep wildlife from cleaning out their own food supply. In these places humans replace historic predators. State, and in some cases, federal laws serve to control harvest to ensure continuation of healthy populations. Abiding by state and federal laws and offering input to change those laws when needed serves the interests of both hunter and wildlife. Though game laws are supposed to be based on scientific research, natural systems are very complex. In some cases, laws and regulations may not always guarantee continuation of a species. In such a case, ethics would dictate restraint. The Alaska Department of Fish and Game, U.S. Fish and Wildlife Service, and other agencies employ wildlife biologists who continually monitor impacts of hunting on wildlife resources. Assisting in monitoring by abiding by state laws concerning licenses, tags, harvest tickets, reporting harvest, and, perhaps most importantly, participating in the review process of laws and regulations will help ensure healthy populations in the years the years to come.

Courtesy of Alaska Department of Fish and Game

Do hunting techniques change for different species?

Yes. If you're hunting for walrus you'd use different techniques than if you were moose hunting. The idea of hunting for self-sufficiency is to get close enough to shoot into a vital area. What differs about hunting techniques is the different means of stalking for different game. Hunting techniques for moose might involve keeping to game trails and willow groves. For deer, you will stalk high in mountains in the early fall, as low as the beach in winter. In the Brooks Range caribou are dispersed on open tundra in late summer, passing through mountain passes in August or September. Techniques vary with people, communities and for species. If you're a beginning hunter, going along with someone else helps you to perfect your own techniques.

How do I choose the right gun for the right job?

Different people prefer different guns. Hunters have a great interest in the subject and they will readily inform you of their preferences. Many people are taught by their father or brother or friend. Another place to find information is from an outfitter or guide. Workers in hardware stores, gun shops, and gunsmiths will help with selecting the right gun for your purpose.
As the National Rifle Association notes,"firearms are generally classified by their type of 'action'. The five basic types are: bolt action, pump action, lever action, hinge action and semi-automatic action. A bolt action firearm operates on a lift, pull and push sequence similar to a door bolt and even looks very similar. On a pump action firearm, the fore-end of the stock is pumped back and forth in order to open and close the action. The pump action firearm is sometimes called a 'slide' or 'trombone' action." A lever action firearm has a metal handle which is located just behind the trigger. To open the action, the handle is pulled downward away from the stock. The hinge action firearm opens, or "breaks" in the center, similar to the movement of a door hinge. To open the action, the release handle is pushed to one side and the barrel or barrels are pressed downward. A revolving action is easy to identify because of its round cylinder. This cylinder is actually a magazine which acts as the chamber when properly aligned with the barrel.

The action release on a revolver is different on various models. Many revolvers have a latch-type release on the side which allows the cylinder to swing out. Some revolvers have cylinders which cannot be swung out or a lifted up and must be loaded and unloaded through a loading gate on the side. A firearm with full automatic action will insert, fire and eject all cartridges in its magazine with a single, continuous trigger pull. (Basic Hunter's Guide, pp-173. 165)

How do I safely handle weapons?

As the adages say, treat every gun as if it is loaded, and never, never point a gun at a human. Anyone familiar with guns knows how many people have been hurt or killed cleaning, transporting, and just handling their weapons. Guns are deadly.

The National Rifle Association lists the following rules:

1. Always keep the muzzle pointed in a safe direction.
2. Treat every firearm as if it were loaded–even when you think it's not.
3. Keep the action of the firearm open except when actually shooting or when storing an unloaded gun.
4. Use the right ammunition for your firearm. Carry only one type of ammunition to be sure you will not mix different types.
5. Be sure of your target–and beyond. Identify the target, then look past it to be sure it is safe to shoot. Do not shoot where your bullet will ricochet. Bullets can ricochet off rocks, trees, metal, water and other surfaces.

6. Alcohol, drugs and shooting do not mix. Drugs and alcohol may impair your judgment. Keen judgment is essential to safe shooting.

7. Beware of fatigue. When you are tired, go back to camp. Fatigue can cause carelessness and clumsiness which can cause accidents. Fatigue can cause you to see things that aren't really there.

8. When you have finished hunting, unload your gun before returning to your vehicle or camp. (Basic Hunter's Guide, p. 165)

How can I hunt safely?

With all the wide open spaces in which to hunt, many Alaskans have not experienced the dangerous overcrowding of hunting areas experienced elsewhere. Hunting safety involves safely handling your own weapon(s), shooting only at a target you've definitely identified, and using safety and survival skills.

The National Rife Association states, "there are several ways to carry a gun safely and at the same time have your gun ready for quick use in the field.

Whichever carrying method you use, these basic rules apply:

1. Keep the muzzle pointed away from yourself and others.

2. Keep the safety in the "ON" position when carrying a firearm.

3. Keep your finger outside the trigger guard.

The NRA lists rifle carries as "two-hand or ready carry, cradle carry, trail carry, elbow or side carry, shoulder carry and sling carry." (Basic Hunter's Guide, p. 178)

What are some ethics in hunting?

The dictionary states that ethics are: *"The study of the general nature of morals and of the specific moral choices to be made by the individual in his relationship with others; the philosophy of morals.* or *The moral quality of a course of action; fitness; propriety."*

Morality involves making choices based on overriding universal principles. Moral or ethical hunting might include using what you kill, hunting lawfully, not hindering the rights of others to enjoy the same privilege. These principles take into account the future of the species, the dignity of the animal and of yourself, and of thinking of those who come there to hunt after you. You might think of an ethical hunter as one who obeys the law, leaves little or no impact, and uses what he/she kills.

The Alaska Fish & Wildlife Safeguard program asks those who hear of a fish or wildlife violation to report it. Call the operator and ask for (800) 478-3377, a toll-free number. It's true that the person you report may get in some trouble, but all need to realize that everyone affects our environment, our wildlife, and each other. Ethical conduct requires diligence. Modeling ethical conduct yourself will go a long way to influencing others.

Hunting
Teacher Page

Competency: Hunt

Tasks:
Obtain state hunting license
Identify rules and regulations for area in which you wish to hunt
Identify state regulations for game for which you wish to hunt
Obtain game tags
Wear proper clothing for conditions
Carry first aid and survival gear
Operate and repair ATC, skiff, or other equipment used in hunting
Set up hunting camp as needed
Describe behavior of species hunted
Use appropriate hunting methods for species hunted
Use survival skills in the out-of-doors while hunting
Dress game in the field
Transport the harvest

Introduction

Alaskans closely identify with hunting. Hunting provides the main dish on many an Alaskan table and some families are fully self-sufficient. While means of hunting have changed, the involvement with the land remains. Those who survive by hunting have a strong interest in the well-being of the prey.

Overview

Though self-sufficiency is not a job in the cash economy, it offers a good bit of food and fiber to Alaskans' tables every year. Hunting can offer quality low-fat protein. Additionally, hunting as a recreational and sports activity offers economic benefits which can benefit largely self-sufficient and subsistence communities, though the cash advantages may be outweighed by impacts on game.

Suggested Learning Activities

1. In preparation for a hunting expedition, obtain a state hunting license and game tags.
2. In preparation for a hunting expedition, decide on the game species for which you wish to hunt and carefully study the state rules and regulations for the area and for the game species you have chosen.
3. In preparation for a hunting expedition, pack appropriate clothing, first aid and survival gear.
4. Transport people and gear to hunting site and set up a camp.
5. Before you leave on your hunt, talk with experienced hunters about the behavior of the species you are hunting. What information about its behavior will help you to locate, follow, and bag your quarry?
6. Begin your hunt, dressing for the weather and carrying appropriate survival gear. Keep in mind the rules and regs for your quarry, safety in the out-of-doors and with firearms, and the behavior of your prey. Stay calm while you shoot, aiming for the animal's lungs so that you don't damage the shoulder flesh.
7. Write about your hunting experience. What was it like to track the animal? What were your thoughts when you first looked at it? How did you feel as you stared at the animal through the sites on your gun? What was your reaction to the kill? Would you do it again? What would you do differently next time?
8. After killing your prey, dress it down immediately in the field, following the tips on pages 15 and 16.
9. Transport the meat, gear, and people back home.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701

Department of Revenue, Fish and Game Licensing Section, 1111 W. 8th Street, Room 108, Juneau, AK 99801 (907) 465-2376

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802.

Nunam Kitlutsisti, P.O. Box 2068, Bethel, AK 99559 (907) 543-2856-*The environmental and research arm of the Association of Village Council Presidents, the official representative body for the fifty-six Native villages of Alaska's Yukon-Kuskokwim Delta region.*

Rural Alaska Resources Association, c/o RURALCAP, P.O. Box 200908, Anchorage, AK 99520. *Newsletter dealing with subsistence issues.*

Survival Education Association, 9035 Golden Given Road E., Tacoma, WA 98445 *Offers the text Surviving the Unexpected a curriculum guide for wilderness survival and survival from natural and man made disasters.*

Books:

Alaskan Camp Cook, Alaska Northwest Publishing Company, Box AA88, 130 Second Avenue South, Edmonds, WA 98020

"Alaska Game Regulations", No. 29, Governing recreational, subsistence and commercial uses of Alaska's wildlife. *Available from sporting goods stores, gun stores, ADF&G offices, from FWP officers, or from Alaska Department of Fish and Game, P.O. Box 3-2000, Juneau, AK 99802. This booklet lists the laws, regulations and definitions related to hunting in Alaska.*

Hunters of the Northern Forest, Richard K. Nelson, University of Chicago Press, Chicago and London, 1973. *Discusses designs for survival among the Alaskan Kutchin Athabascan people.*

Hunters of the Northern Ice, Richard K. Nelson, University of Chicago Press, Chicago and London, 1969. *Detailed description of techniques, equipment, and Eskimo Arctic lore.*

Survival, Evasion, and Escape, *was intended for Army personnel. However, this manual contains useful information for self-sufficient outdoors living as well. It covers firemaking and cooking, finding food and water, survival in cold weather, and much more. Available for $9.00 from: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (202) 783-3238*

You and Your Wild Game, Cooperative Extension Service, University of Alaska, 1983.

Hunting

Do I need a hunting license?

Yes. Alaska law requires a hunting license for hunting, trapping, and fishing. Hunters may obtain licenses, metal locking tags, harvest reports and tickets from any designated issuing agent or by mail from the Department of Revenue. Harvest reports with attached harvest tickets may be obtained without charge from any licensing agent or Department of Fish and Game office.

Where are hunting rules and regs?

You can pick up a copy of **Alaska Game Regulations** at virtually any gun store, sporting goods store, or Alaska Fish and Game office, or from the local Fish and Wildlife Protection Officer. To use their self-explanatory booklet, familiarize yourself with the statewide general information, determine the Game Management Unit (GMU) in which you wish to hunt by studying the maps in the booklet, and turn to the portion of the booklet identifying the species for which you wish to hunt. When seasons or bag limits differ for various 'types' of hunter, read under either **Subsistence Hunter, Resident Hunter** or **Nonresident Hunter**, depending on which category is right for you. You will find the dates for open season.

Where can I find overall state regs concerning hunting?

Overall state regulations are listed in the **Statewide Information** portion of **Alaska Game Regulations.** Statewide information includes information about land designations, definitions, common violations, information on licenses, metal locking tags and fees, statewide provisions, permits, methods and means of taking game, information on possession and transportation of game, use of game, and emergency taking of game. This booklet is invaluable to the self-sufficient hunter and sports hunter alike.

Where can I find game tags?

Licenses, metal locking tags, harvest reports and tickets may be obtained from any designated issuing agent or by mail from the Department of Revenue, Fish and Game Licensing Section, 1111 W. 8th Street, Room 108, Juneau, AK 99801 Phone (907) 465-2376.

Laws and rules vary per species and area regarding game tags. The booklet **Alaska Game Regulations** will inform of special rules and regulations regarding game tags.

Do I need special clothing for hunting?

Special clothing for hunting might include traditional clothing in some rural areas or "high tech" gear used for backpacking or hiking. Expect the unexpected because the weather in Alaska can be unforgiving. Clothing which insulates when wet, including wool and synthetics like polypropylene and pile, rain gear, proper footwear, and protection from insects is invaluable. Protect yourself from the killer, hypothermia.

Should I take first aid and survival gear?

First aid and survival gear are a must in Alaska. Hypothermia has been termed *the silent killer.* Even the shortest hunting trip has the potential for disaster. Survival gear, knowledge and skill are a nearly unbeatable combination. For example, in spring, 1988, thirteen Eskimo walrus hunters went out to sea on an ice floe near St. Lawrence Island. They were lost for nearly two weeks. A search was mounted, though visibility was poor. Eventually, the hunters made their way to land, and were found on a remote end of the island. They had survived using their own wits and skills.

Take warm clothing of wool, pile, fiber or polypropelene material, extra food, a space blanket for warmth, and especially dry food such as rice, noodles and/or dehydrated foods which don't take up much room but have considerable food value. The first aid and survival gear you take depends on your storage space. If you have a permanent cabin used for hunting, you can stock a good bit of survival gear such as wool blankets, matches in jars, camp fuel, wood, canned goods and dry foods (kept in bear-proof containers). For first aid equipment you could stock a backboard, triangular bandages, air splints, and even oxygen. Basic first aid kits are available from many sporting goods and boat supply stores. If your space is limited on a boat, snow machine, or in a backpack, just take the basics. For survival, you need water, warmth, food, and shelter.

What machinery should I use for hunting?

Most who hunt for self-sufficiency use some sort of machinery to get to and from the hunting site, to haul game, or to transport meat. Alaskans use a variety of machinery when hunting, including all-terrain vehicles, all-terrain cycles, skiffs, flat-bottom boats, air boats, and pick-up trucks. Many hunters use aircraft to get to an area and to bring out game . Be familiar with rules and regulations regarding machinery. For example, three-wheelers are not permitted in the utility corridor five miles either side of the trans-Alaska pipeline and aircraft may not be used for subsistence purposes in national parks. You can find out how to use the particular machinery locally. ATCs and other vehicles come with operators manuals for service.

Do I need to set up a hunting camp?

Setting up a hunting camp is a matter of preference and custom. In Alaska many areas are too far from the road system for easy accessibility. Some Native groups set up hunting camps in traditional sites, for example, the tent camp north of Anaktuvuk Pass. Those who use aircraft cannot, by state law, fly and hunt on the same day, so for those using aircraft, a hunting camp is necessary. A variety of criteria are used to select the location for hunting camps–ease of access, nearby lake for float plane or airstrip or gravel bar for wheeled plane, access to good hunting, access to a stream for drinking and cooking water, safety, wind conditions.
If you are camping in tents in your hunting camp, keep a clean camp, minimize your impact, burn or carry out all refuse, and don't feed the animals.

Is it important to know the behavior of a species hunted?

As those who are self-sufficient can testify, self-sufficiency is not easy. Subsistence hunting can involve generations of information, a lifetime of skills. Using the rifle, bow, or harpoon is just part of the skill of hunting. Knowing the behavior of the species hunted puts the hunter in the right place for the kill. In a way, hunting *is* knowing the behavior of the species hunted.

Know the foods preferred by your quarry. **Black bears** can be found along salmon streams or in dense brushy areas where they may feed on berries. You can stalk upstream during salmon-spawning, or hunt in the area of bear trails when berries are ripe. In high country seek a lookout point and search above timber line. Bears may stay and feed for quite some time in a single berry patch. Black bears hibernate from November to April or May.

Moose consume willow, aspen and birch. In summer they feed on underwater vegetation in shallow ponds. In mountainous terrain bulls spend the summer and fall at or above the timber line. Antlers are shed in November, December and January.

Caribou, being herd animals, are usually found in groups. They may be found sleeping during the warm afternoon hours.

Deer feed mainly on herbaceous plants. In spring they are found on beaches to feed on new beach grass, sedges and plantain. As snow recedes, they feed on salmonberry and blueberry leaves, skunk cabbage, and marsh marigold. By July they are found in the high country where they can find skunk cabbage. At the first snows they slip down to the high timber and alder slides, feeding on young shoots of salmonberry and black currant. When the snow comes, they head a little lower in the trees, feeding on woody plants such as blueberry. When the snow is deep they are forced to open beaches to feed on dry beach grass, kelp and even evergreens.

Elk, introduced to several islands in Alaska, use a variety of foods including bluejoint grass, sedges, lupine, fireweed, cow parsnip, sea lovage and chickweed. In winter elk feed on highbush cranberry, elderberry, willow and sprouts of devil's club.

Bison, found in the Delta Junction, McGrath, Healy and Copper River drainages, eat grass. **Mountain goats** are found in high mountain pastures in summer. In winter they may be driven down into the trees by harsh conditions. **Dall sheep** feed mostly on grasses, leafy ground plants, mosses and lichens on alpine slopes. In winter they can be found on wind-blown ridges which have grass exposed. They may be forced to descend to lower levels on mountains to find plants to eat.

A factor influencing the behavior of all the the above species is the rut, or mating season.

The hunting of marine mammals, restricted to Alaska Natives, depends on access to the animals (sea and ice conditions), migration patterns, and factors such as fat content. **Seals,** for example, are hunted generally in winter because a seal shot in summer sinks. **Whale** hunting, generally only found from St. Lawrence Island northward, depends on migration patterns recognized by generations of experience. **Walrus** hunting depends on favorable sea and ice conditions for hunters. See Richard Nelson's books, Hunters of the Northern Ice and Hunters of the Northern Forest.

What about appropriate hunting methods for species hunted?

Appropriate hunting methods include abiding by state and federal law. The best place to find out appropriate hunting methods is from other hunters. In this regard, not every hunter is going to tell you secrets. In some communities a level of trust must be reached before such appropriate methods are revealed to you. Though many books and magazines exist discussing various hunting methods, in some communities the best way to learn is by reaching that level of trust with those who have hunted that area.

For big game it helps to know behavior patterns. You'll need an appropriate firearm. For bear, a rifle of at least .30 caliber using a bullet of at least 180 grains with no less than about 2,500 foot-pounds muzzle energy works best. A chest shot which reaches lungs and heart is important for bear. For moose, a rifle of at least .30 caliber with a bullet of at least 200 grains and 2,500-foot-pounds muzzle energy should be used. For caribou the shots may be long-up to 300 yards. Caribou are thin-skinned and light-boned. Use a high-velocity rifle like a .270, .284, 7 mm or .30-'06 and a bullet weight of 125 grains minimum. For deer, use a rifle in the .30-06 class. Walrus, with thick hides, are taken with higher-caliber weapons than seals. Inquire of local hunters for details.

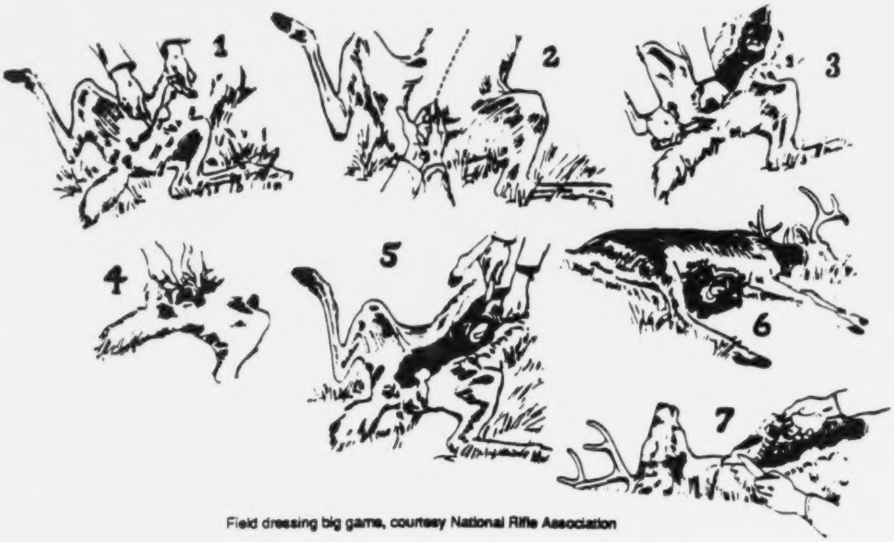
What are some hunting survival skills ?

Hunting survival skills involve being ready for weather and other variables. The ability to erect a shelter, build a fire, signal an aircraft, and obtain food in a pinch may mean the difference between your surviving and not. Hypothermia is the killer in Alaska. Be prepared for cool–or cold– weather. Plan for delays. Extra food in your pack, a sleeping bag in a waterproof sack in your aircraft, some waterproof matches in a jar in your skiff, may mean the difference between life and death in an emergency.

How do I dress game in the field?

Small game can be transported dressed or not dressed. The Cooperative Extension Service has some excellent publications on dressing game. The publication **You and Your Wild Game** offers the following *Summary of Handling Procedures:*

1. *Bleed by cutting the throat or sticking. Caution: Do not cut the throat when the head is to be mounted.*
2. *Eviscerate [cut the guts out] as soon as the animal is dead.*
3. *Hang to drain and wash inside with clean water. Put the carcass on logs or rocks if it cannot be hung.*
4. *In warm weather, when possible, it is strongly recommended that you take the carcass to a cooler the day of the kill.*
5. *If skinned, use cheesecloth or light cotton bags to keep the carcass clean, to protect the meat from insects, and to allow cooling.*
6. *Make sure the internal temperature of the meat is cooled to 40° F or below within 24 hours. This may require cooling facilities.*
7. *Limit aging times and follow the aging procedures outlined.*
8. *Trim fat and inedible parts from the carcass when it is cut.*
9. *Mix 15% pork or beef fat with ground game and 35% pork fat with fresh game sausage.*
10. *Wrap all cuts (fresh or cured) in good quality freezer paper and store at 0° F or colder.*
11. *Limit fresh game to eight months' frozen storage and seasoned or cured game to four months' storage.*



Field dressing big game, courtesy National Rifle Association

The publication continues: "When the animals have been shot in the ribs, internal bleeding into the chest cavity may be enough. Most other shots take additional bleeding. Some hunters stick the carcass by severing the large blood vessel leading to the heart. If no trophy is desired, slashing the throat all the way to the bone will aid bleeding. Proper bleeding improves keeping qualities and appearance of the meat." (You and Your Wild Game, *p. 3)*

You and Your Wild Game continues: "A carefully dressed game animal is the hunter's pride. Two major rules to follow are: 1. Get all the innards (intestines, lungs, liver, heart) out as soon after the kill as possible and 2. Get the carcass off the ground, and, if possible, into the shade to cool as soon as dressing is completed.

"Since time is vital to the quality of the meat, start by removing the innards quickly and completely. To dress, lay the animal on its back and block the carcass on both sides with rocks or logs to keep it from tipping over. Stand next to the front legs facing the tail. Start a knife slit in the hide in the center of the breastbone. Continue cutting the hide from the breast bone to the udder, in the case of a female, or to the penis opening, in the case of a male. Be careful not to cut the entrails [guts]. Some hunters prefer to insert their whole hand in the opening just below the breast bone as soon as a large enough cut is made. The knife is then grasped by the handle with the blade pointed upward. This procedure avoids puncture. Other hunters avoid entrail puncture by inserting two fingers (one on each side of the knife blade) in the slit next to the breastbone.

"As the hide is opened the two fingers are used to push the entrails down and away from the knife. If the animal is a female remove the udder by cutting underneath. If the animal is a male cut down the side of the penis and remove the penis where it is attached to the hind legs. The scrotum and testicles can be cut off or, if the head is to be removed, and left at the site of the kill, the scrotum should be left attached to the hide for sex identification.

"Next, cut around the anus and pull the large intestine into the body cavity. At this point in the dressing procedure the carcass can be tipped over and the entrails rolled out. Some cutting with the knife to loosen the entrails from the body wall will be necessary. Remove the liver and then cut through the thin diaphragm that separates the chest cavity from the entrails. Cut through the hide just in front of the breast in the breastbone cavity. Now return to the cut in the diaphragm and pull lungs, heart, windpipe and gullet out of the carcass. If you plan to have the head mounted make sure that the cut is a small one. Better still, reach through the diaphragm hole up into the neck as far as you can and, working blind, cut loose the windpipe and gullet ahead of the lungs. Remove the chest contents. Set the heart and liver on a rock or clean log to drain and cool.

"Necks of animals, other than those which will be mounted, should be slit open, and the gullet and windpipe should be removed. The breast bone and the pelvic bone should be split and propped open. They can be split with a knife if the hunter is experienced. If the hunter is inexperienced it is best to use a saw for making these cuts.

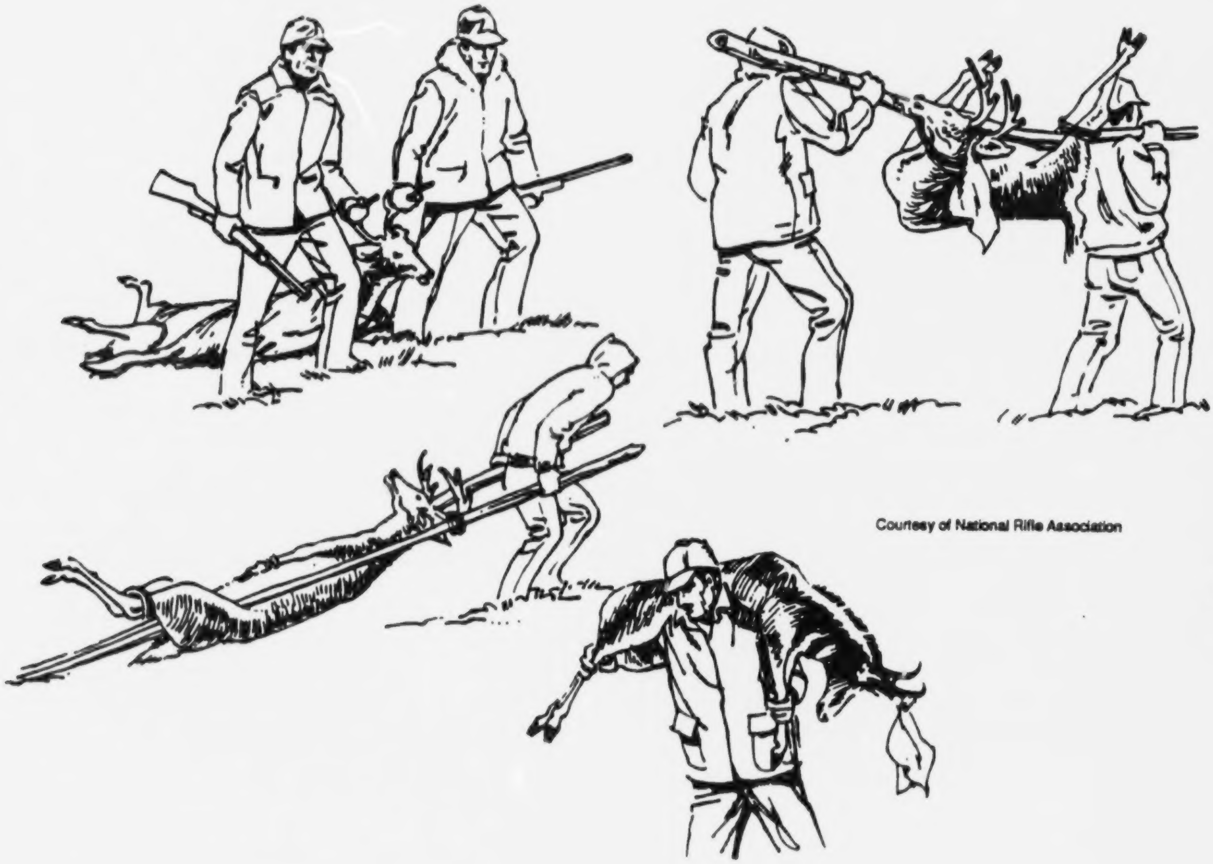
"Wipe the body cavity thoroughly with a clean cloth, or wash if water or snow is available. Prop the cavity open with sharpened sticks and hang the carcass until the cavity surface is thoroughly dry. Be sure there is good air circulation. Put the carcass on rocks or logs if it cannot be hung." (You and Your Wild Game, pp. 4-5)

Some hunters, who have limited space on aircraft, snow machine, or ATV, bone their game in the field and place meat in cheesecloth. Cheesecloth allows air contact and reduces parasites on the meat.

How do I transport the harvest?

Traditionally the hunter might have hauled the game out of the field on his back. Today, with the exception of the roughest country, you will probably use some sort of machinery to bring the harvest out of the field. Some hunters use All-Terrain Vehicles (ATVs), some use small aircraft, others drag the harvest to the road and haul it out by pickup. If you live by a river or the sea, you might transport the harvest by skiff.

"Hunters who have long distances to travel should not attempt to transport skin-on carcasses in warm weather because the meat often spoils en route. Carcasses should be skinned, quartered and packed in ice for the trip home. " (You and Your Wild Game, p. 6)



Courtesy of National Rifle Association

Means and Methods of Self-Sufficiency Trapping
Teacher Page

Competency: **Understand means and methods of self-sufficiency trapping in Alaska**

Tasks:
Compare traditional versus contemporary means of self-sufficiency trapping
Identify impacts of trapping on the overall resource
Apply conservation and game management principles
Identify rules and regulations for hunting and trapping
Compare types of traps
Equip for trapping
Preserve and set baits
Care for and set traps
Skin animals
Tan skins
Market skins and hides
Cut out and design patterns on skins
Manage business records related to trapping

Introduction

Non-Natives first came to Alaska in search of furs. The fur industry is an important industry in the state. Not only does it represent a way of life for many self-sufficiency trappers, but it also contributes to the rural economy. For tourists coming to Alaska, purchasing furs adds to their experience. Trapping, however, is a growing business under siege from those opposed to trapping on moral grounds. According to the Juneau Empire, in 1960, only 16 trapping permits were issued for (what is now) the Kenai National Wildlife Refuge. The winter of 1987-88 saw 76 permits issued.

Overview

In 1985 500,000 men, women and young people supplemented their income through trapping in 49 states. That year retail fur sales amounted to $1.65 billion.

As William Schneider relates: "There is a subsistence lifestyle which often involves trapping. When Natives and a considerable number of non-Natives who have been raised in the North are living a subsistence lifestyle which involves trapping they are: 1) returning to an area where they have trapped with parents or other relatives; 2) combining traditional skills and modern technology; 3) selling the fur to a trader, fur buyer, or fur company for cash; 4) using the cash for many things, some related to subsistence, some not; 5) recognized in the community for their success in trapping because trapping is considered important for people to do in winter. Trapping has always involved an exchange, first for goods then for cash. In some areas, for almost 100 years cash has been a part of the trapping economy. Cash is a necessary part of life in rural Alaska and cannot be divorced from the subsistence economy. Trapping for exchange, first goods then cash has been a strong acculturative force from the prehistoric to the present. It has influenced settlement, yearly cycle, clothing, diet and other aspects of life. The quest for furs has focused international attention on Alaska and continues to shape the history of the state. Trapping offers the opportunity for individuals to maintain an intimate tie with the land and to still acquire cash necessary for livelihood. Trapping is attractive to many newcomers to the North, in part because they feel trapping provides a chance for self-sufficiency and because they identify with an activity which has some historic depth." ("Trapping Furbearers In Alaska: A Legacy And, Perhaps A Destiny!": ", pp. 19-20)

Suggested Learning Activities

1. Invite trappers to class to show slides, display different kinds of traps and furs, and to discuss how they set and care for traps, run traplines, kill and skin their prey, prepare skins for market, market the skins, and manage business records. Ask for their comments on the appropriateness and usefulness of trapping rules and regulations, and conflicts with other trappers.
2. The Alaska State Museum has several multi-media kits and publications containing furs, slides, information, and learning activities that apply to both hunting and trapping. These circulate throughout the state by request. Contact the Alaska State Museum, 395 Whittier St., Juneau, Alaska 99801
3. Project Wild: "Pro and Con: Consumptive and Non-Consumptive Uses for Wildlife", p. 33. Research and debate the topic.
4. Study the rules and regulations for trapping.
5. Research and debate the use and ethics of using different kinds of traps.
6. Prepare a photojournalistic essay on one trapper. Accompany an experienced trapper into the field. Take notes and photograph this person's activities, from setting traps with bait to checking traps, killing and skinning animals, tanning or otherwise preparing skins for market, and actually selling the skins. Observe your trapper keeping track of business records.

Resources

Aboriginal Trappers Federation of Canada, 450 Rideau Street, 4th Floor, Ottawa, Ontario, Canada K1N 5Z4 *A group of 26 members consolidated to assist Aboriginal People of the many regions of Canada in becoming more aware and better organized so that they could deliver educational material and projects with respect to renewable resources and the fur industry.*

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802

Fur Institute of Canada, 60 Bloor Street West, Suite 205, Toronto, Ontario, Canada M4W 3B8 *Offers a fine series of pamphlets: "Fur Ranching;" "The Fur Industry";"Trap Research.;"Furbearers";"Trapper Education"; "The History of the Fur Trade"; "Trappers"; "Aboriginal Trappers"; "Our Land, Our Culture, Our Future";"On Nature's Terms".*

Indigenous Survival International, c/o Matthew Iya, Kawerak Inc., Nome, AK 99762 (907) 443-5231 or c/o Ben Nageak, North Slope Borough, Barrow, AK 99723 (907) 852-2611 or International Headquarters, Suite 300, 47 Clarence St., Ottawa, Ontario, Canada K1N 9K1 (613) 236-0673. *An international alliance of the aboriginal peoples of Canada, Alaska and Greenland whose major focus is conservation and sustainable development.*

Nunam Kitlutsisti, P.O. Box 2068, Bethel, AK 99559 (907) 543-2856-*The environmental and research arm of the Association of Village Council Presidents, the official representative body for the fifty-six Native villages of Alaska's Yukon-Kuskokwim Delta region.*

Rural Alaska Resources Association, c/o RURALCAP, P.O. Box 200908, Anchorage, AK 99520. *Newsletter dealing with subsistence issues.*

Yukon Flats Fur Cooperative, P.O. Box 126, Fort Yukon, AK 99740 ((07) 662-2587 or (907) 662-2581 *A new organization of Athabascan Indian Trappers incorporated in the state of Alaska in 1987 to market their own furs. They invite inquiries.*

Books and Pamphlets:

Search : The Continuing Story Of The Tracker , Tom Brown Jr., with William Owen, Englewood Cliffs N J Prentice Hall ,1980

Skin Sewing for Clothing in Akula, Alaska Historical Commission Studies in History, No. 22. Office of History and Archaeology, P.O. Box 107001, Anchorage, AK 99510-7001. *This publication includes methods to catch fur-bearing animals, traditional ways to prepare a skin for use, and how-tos for creating a variety of skin products.*

"Tanning at Home," Cooperative Extension Service, A-003209, University of Alaska, reprinted 1984.

Trails of An Alaskan Trapper, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

"TRAPPING FURBEARERS IN ALASKA: A LEGACY AND, PERHAPS A DESTINY!" by William Schneider, from *Alaska in perspective, The Alaska Historical Commission, 3221 Providence Ave., Anchorage, AK 99503, Volume III, No. 1, 1980.*

Trapping and Conservation Manual, 1987. Alberta Advanced Education, Forestry, Lands & Wildlife, 1st Floor, North Tower, Petroleum Plaza, 9945 – 108 Street, Edmonton, Alberta Canada T5K 2G6 *This 525-page book is meant to accompany formal classes in Alberta. The book is currently out of print, but a copy may be borrowed from the Office of Adult and Vocational Education, Alaska Department of Education.*

"Yukon-Kuskokwim Delta Tundra and Flatland Trapping for the Entry-Level Trapper," *available from Nunam Kitlutsisti; an excellent how-to pamphlet.*

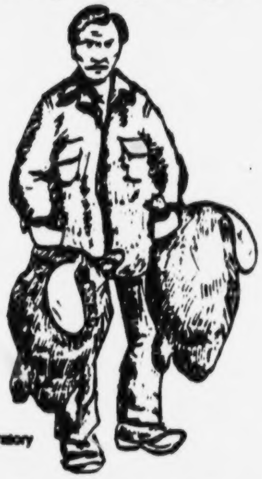
Means and Methods of Self-Sufficiency Trapping

How does the way we trap today compare with the way it was traditionally done?

Trapping has played a part in the Alaskan economy for thousands of years. Though trapping animals for clothing was certainly a part of life for Native people, trapping did not have the signification that it later took for non-Native explorers. In fact, it was Russian fur traders who made inroads into Alaska for non-Natives. Later, the Hudson's Bay Company extended trading forts across Canada and into Alaska. Alaska's furbearing resources were the first resources to draw international attention.

How does trapping today differ? As William Schneider states:

"Today the village has increased in importance as a focus of activities, with telephone service, health aides, land claims and management meetings. Today's village teenagers often complete high school and some go to college. Construction of village high schools signals a growing local accessibility to the skills of a formal education.



Courtesy of Anchorage Literacy Laboratory

"The impact of snowmachines on village life can also be understood in light of increasing commitment of people to the services and amenities of village life. Snowmachines permit rapid access to family traplines, allow the trapper to check his line in less time, and eliminate the need to fish for dog food. Fur hunting from snowmachines has become a new aspect of trapping. In open tundra areas, snowmachines permit trappers to follow furbearer tracks and sometimes to shoot the animals. On the North Slope middle-aged Eskimos on snowmachines have been able to get back to areas that they first experienced with their fathers, at a time when there were fewer pressures for being in the village. In turn, the snow machine ties the trapper to a fuel source and the cash economy which provides the means for buying fuel, parts, and new machines.

"A trapper may opt to work on a village construction project during the summer to supplement his fur catch in order to purchase a new snow machine and fuel. A village office worker may leave on weekends to set and check his [or her] trapline which is many miles away. A villager returning from years spent in the Lower 48 may go back to the family trapline for a season or more. A busy Native leader may decide to take three weeks off in the spring to take their family and return to their camp and hunt muskrats.

"The various ways that people incorporate cash into trapping have become multiplied by the introduction of technology such as outboard motors, snowmachines, and even aircraft. On one hand these machines permit rapid access to traditional areas and they permit people living a village-centered life to get back regularly to the land that they know and have been raised to enjoy. On the other hand, trapping has become more expensive, because it is dependent upon commodities shipped from the Lower 48.

"High fur prices have provided increased incentive for trappers to participate in at least part of the trapping cycle. But even more important than the financial returns from trapping (and they are generally not high when compared with wage labor) are the values derived from being able to maintain contact with traditional areas, traditional skills, and family associations out on the land. An elder speaks proudly of his sons who have returned to trapping after years of schooling and wage employment. The 'River People,' a group of young non-Natives from the Lower 48, have established themselves on the upper Yukon River where they are attempting to trap and live off the land, following what for them is a new lifestyle. They are learning their lessons from hard work, mistakes, and the villagers. These people are also demonstrating the continuing values of trapping. ("Trapping Furbearers in Alaska; A Legacy and, Perhaps a Destiny!" pp. 18-19)

"The long history of trapping cannot be denied. The meaning of that heritage to people today is demonstrated in the efforts to maintain ties with the land and the lifeways. In a rapidly changing world the opportunity to maintain ties with the past provides a basis for continued success and personal as well as group esteem.

"An understanding of these values is reinforced by the example of newcomers who are attempting to establish a tradition with the land. The newcomers may, in time, follow the pattern of the miners and others who, in the past, turned to trapping, married local people, and are now part of the heritage. Their story is referenced by names on U.S.G.S. maps and by their children and grandchildren who have found meaning for their lives in the communities and on the land.

"Writing about the people from the Yukon-Charley River area, on the upper Yukon, Grauman has described well the dreams and dilemmas of a group of trappers who are seeking a lifestyle based on the past but compatible with their perceived needs.

"Trappers are returning for values other than profit. These latter-day trappers represent a 'return to the land' syndrome, resulting from an environmentally conscious society and a recognition of lost values of self-sufficiency and rugged individualism. Although many if not all are in 'trespass,' they epitomize the historic use of the land traced from the early Indian through the Russian and English fur trader, into the supplemental occupations of the gold-rush miner, and throughout the profitable trapping eras of the 1920s and 1930s.

The difference between the newcomer and established villagers may be that the newcomer finds the heritage appealing and is searching to establish that way of life. The established trapper knows his roots, recognizes that the future will demand some changes but desires to maintain ties with the way of life which he [she] has identified with all his [her] life, an identification which the individual may be able to trace to his experiences as a young boy listening to a grandfather tell of trading chiefs and the first traders in the area, or an identification which a woman may have with time spent in a mission school while her parents were out on a trapline." ("Trapping Furbearers in Alaska; A Legacy and, Perhaps a Destiny!" pp. 18-19)

How does trapping affect the overall resource?

Like so many issues in resource management, how trapping affects the overall resource varies in opinion. Trapping is a long-standing human livelihood. Animal skins have clothed human beings for thousands of years.

As the Alberta Trapping and Conservation Manual, 1987 states, "Seasons for trapping furbearing animals are necessary in order to restrict the Time period during which they may be taken. This ensures that animals are protected during the breeding and rearing seasons. Seasons also attempt to encourage trapping when furs are at their prime, thus increasing the revenue to trappers. Seasons, therefore, discourage waste of a resources.

Quotas are necessary in order to conserve the species by limiting the total take in order to prevent overharvesting. Quotas, therefore, ensure an equitable harvest of a limited amount of surplus among the trappers." (Trapping and Conservation Manual, 1987 , p. 180)

What are some conservation and game management principles which apply to trapping?

Obviously having healthy populations of the animals being trapped is in the best interest of the trapper. The Alaska Department of Fish and Game and other management agencies employ biologists and others to ensure that furbearer populations remain healthy.

In many areas of Alaska trappers point proudly to strong furbearer populations. One must be remember, however, that proper management is a necessity in this industry. Trapping has the capability to wipe out entire populations, witness the historic decimation of the beaver population in the Lower 48.

Conservation and game management principles include closing areas to trapping where populations of furbearers are dropping, limiting numbers and types of wildlife taken, and limiting who has the right to trap. Trappers themselves have an informal conservation and management technique in the trapline. A trapline is a route a person traps, setting the traps convenient to each other so that the trapper may follow a circuit to check and rebait traps with a minimum of difficulty. More importantly, traplines must be placed in areas where animals can be trapped–where populations are healthy. Establishing a trapline with all these criteria takes a good bit of time–and knowledge. A trapper owns a trapline by virtue of establishing it. An unwritten rule of trappers is to stay off of someone else's trapline. And of course a trapper would not take an animal trapped in someone else's trap any more than someone would steal something from someone's house. Some traplines are passed from father to son, from cousin to cousin. Traplines must be respected. The new trapper should remember that good traplines take time and energy to establish, and many of the best areas for trapping have already been taken. Established trappers, with established traplines will already know a good bit about conservation and game management techniques in their area for particular species.

What about rules and regulations for hunting and trapping?

Trapping in Alaska is regulated by the Alaska Board of Game, Alaska Department of Fish and Game. Regulations are published in "Alaska Trapping Regulations, No. 28" a booklet which is available from sporting goods stores, hardware stores, from FWP officers, or the Alaska Department of Fish and Game, Box 3-2000, Juneau, AK 99802. A special hunting, trapping and sport fishing license is available for resident heads of families or a dependent member of that person's family or one solely dependent upon that person for support for a fee of 25 cents upon presentation of proof that the person:

(a) is obtaining or has obtained assistance during the preceding 6 months under any state or federal welfare program to aid the indigent; or

(b) had an annual gross income of less than $5,600.00 for the year preceding the application.

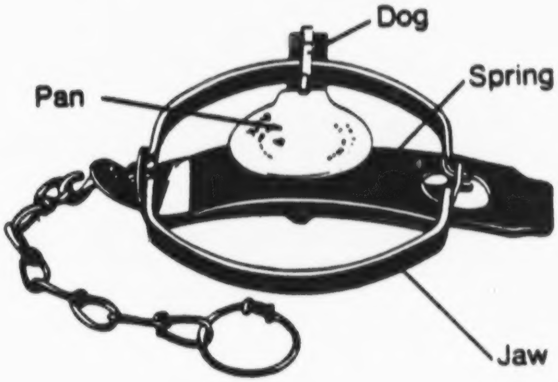
No Sport Fishing, Hunting or Trapping license is required of an Alaska resident over 60 years of age who has resided in Alaska for one or more consecutive years. An identification card is required. The card may be obtained from the Alaska Department of Revenue office in Juneau.

How do different types of traps compare?

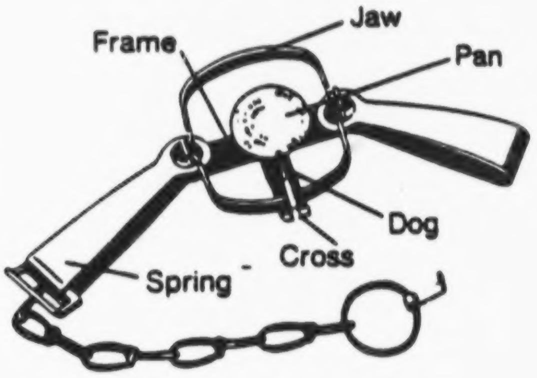
According to the Fur Institute of Canada, most of the furbearers taken spend some time in water. That means that a good share of the animals trapped are beaver, mink, otter, or muskrat. As their pamphlet "With Respect to Trap Research" states, "These species can readily be taken in killing traps set on land or under water. Or traps may be set near water, to take advantage of the animal's tendency to dive for its natural cover. The traps are attached to one-way slide locks, designed to prevent the animal from resurfacing. This assures a relatively quick death." In these traps, death is by drowning. ("With Respect to Trap Research," p. 2)

As the American Fur Resources Institute notes: "the 'trap' covers a multitude of devices that can be divided into two types: those that instantly kill and those that restrain. The controversial leg-hold trap (more appropriately called a foot-hold trap) is a restraining trap that can be set on land or in water. When used in water it is a killer trap. Many refer to this trap as a 'steel-jawed' trap that conjures up the image of serrated teeth. No such traps [with serrated teeth] are manufactured today.

Jump Traps



Long Spring Traps



"Although many modifications have been made to make it more effective and efficient, the basic design of the foot-hold trap was manufactured by Sewell Newhouse in 1823. Trap study and research is continuous both in the United States and Canada. In fact, over 4,000 patents have been granted in both countries in the past 100 years. The foot-hold trap, however, continues to be the most effective trap for certain species.

"A killer trap can be used for some species. They should not be used in areas where they may be accessible to children or pets. A non-target animal can be released from a foot-hold trap without permanent injury as study after study indicates. Killer traps, then, are not an alternative to the foot-hold. Snares are also nonselective and asphyxiate the animal.

"Box or cage traps can be used for certain purposes such as animal research and relocation. They are not effective for long-legged predators such as coyotes and fox. Also, such devices are impractical to carry on long trap lines. " ("Separating trapping, emotionalism," by Stephen Boynton, Anchorage Daily News, March 28, 1986)

How do I preserve and set baits?

As Nunam Kitlutsisti relates:

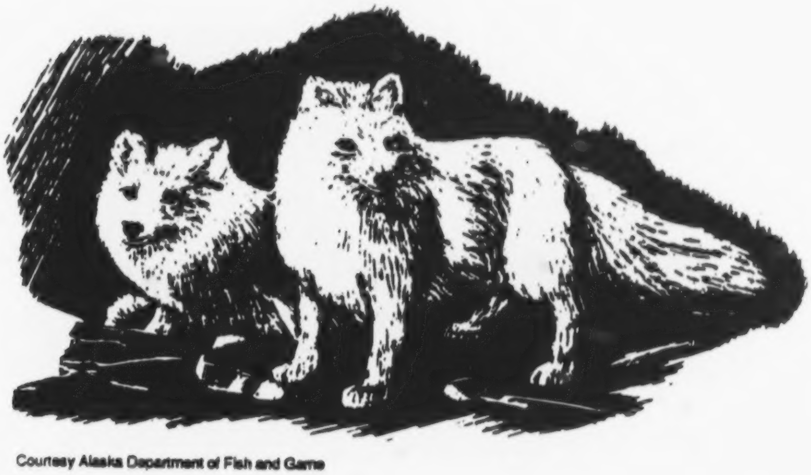
"Bait is made from chunks of meat, such as fish, beaver, or muskrat. Bait can be used fresh or tainted. To taint meat, place in a glass jar or a can and bury it under a pile of dirt for 7 to 10 days. Sprinkling borax powder over the meat will prevent it from spoiling further after this process. Tainted baits should be used in small amounts. Beaver flesh often works best because of its fatty consistency, which holds odors even in cold weather. "

"You can purchase good lures from trapping supply houses, or they can be made from animal musks, urine, commercial oils, flesh, and a variety of other glands and organs. Do not depend only on a lure when using one for the first time. It's a good idea to experiment with a variety of lures and bait until you find the combination that works best for you. There are three types of lure scents:

1. **Gland Scents** are made from the gall bladders, urinary bladders, and musk glands of various animals. Gland scents usually work best on carnivores. Using too little gland scent is better than using too much. Two or three drops at each set is a sufficient amount. A little more may be necessary during below-freezing weather.

2. **Food Scents** are extracts of such smells as honey, anise, peanut butter, eggs and cheese. Food scents can also be made from fish oil.

3. **Curiosity Scents** are blends of perfume oils and musk, beaver, and muskrat castors. Curiosity scents are usually not as effective as gland and food scents." ("Yukon-Kuskokwim Delta Tundra and Flatland Trapping for the Entry-Level Trapper", p. 4-5)



Courtesy Alaska Department of Fish and Game

How about caring for and setting traps?

As Nunam Kitlusisti continues:

"Properly treated traps will last longer and work better than untreated traps. New traps are covered with a thin coat of oil that must be removed before the traps can be treated. Buy new traps early and look them over, making sure they work and can be adjusted where necessary.

"Remove the factory oil and human smell from the traps using the methods outlined below. There are many ways to prepare traps; the techniques described here work well for other trappers.

1. Insert a spacer between trap jaws so that they are also treated. Try using the ring on the trap chain or a nail.
2. Boil traps in hardwood ashes or household lye (1 tablespoon for every 2 gallons of water) to remove oil. Do not lift traps out through the solution. Instead, pour it off first so the traps are not contaminated with oil. A cut-down 55-gallon drum makes a good container for boiling traps.
3. Let traps rust by laying them in grass, burying them in mud, hanging them in damp air, or soaking them in water.
4. After a good rust has formed (about 2 or 3 weeks), boil them again with trap dye or bark (lock root or birch bark). Boil for 1 hour, then simmer another hour, and let the traps soak overnight to get rid of any factory or human odors.
5. Wax fox and wolf traps. Other traps can also be waxed; they work faster when waxed. Drop 2 to 3 cakes of paraffin into a 5-gallon bucket of boiling water. Bring water to a rolling boil. The wax will float on top of the water. Lower the traps into the water, holding them with wire while dipping. Slowly lift the traps out of the water, one at a time, and hang them to dry in a place that is free of all obstacles and away from dogs, smoke, and gas fumes. Be careful not to handle the traps after taking them out of the wax. Always wear rubber gloves while preparing your traps.
6. If you have waxed conibear traps, scrape the wax away from where the dog holds the trigger and from the trigger itself, or the trap will be hair-triggered.
7. Store dry traps in clean wooden boxes. Pile the boxes in a dry place away from contaminants, and cover with a plastic tarp.

Traps that are treated every year will last for 15 to 20 years. ("Yukon-Kuskokwim Delta Tundra and Flatland Trapping for the Entry-Level Trapper", p. 4-5)

What are some techniques for skinning animals?

Nunam Kitlutsisti states:

If there's dry snow,…"roll the fur-bearing animal in the snow to wick off the excess moisture and clean the fur. If there is no snow, squeeze out the excess moisture, staring from the head and working your way toward the tip of the tail.

"Mink, otter, and muskrats caught in submarine, snare or conibear traps should be dried and cleaned as soon as possible. Additional drying may be required after arriving home. Individually hang the mink, muskrat, or otter at room temperature.

"If the animals are skinned while damp, the pelts can be further dried by hanging them on strings or nails. Make sure the raw skin sides are aligned and touching, with none of the skin exposed.

"Well-dried specimens can be packed together in a canvas pack. Pack wet animals together, insulated by grass, an extra jacket, or a tarp to keep them from freezing. Store in a covered sled or box.

"If the animal is frozen, take it as it is. Avoid contact with other animals by wrapping it individually or by cushioning it while transporting it home." ("Yukon-Kuskokwim Delta Tundra and Flatland Trapping for the Entry-Level Trapper", p. 4-5)

How do I tan skins?

Skins which are sold are usually not tanned–the buyer ships the skins to a commercial tanner. As stated in "Tanning at Home":

"In early America each community had its tannery. The skills and knowledge were generally handed down from father to son. Large efficient commercial tanneries, along with good transportation and mail service, have almost eliminated the need for individuals to know how to care for skins and some method of skin preservation or tanning. However, in isolated areas of Alaska the lack of these facilities and the resulting high cost of commercial tanning has led to the need for individuals to know know how to care for skins and some method of tanning. Working with skins has been a part of the Alaskan scene for hundreds of y ears and will continue to be so in the future." ("Tanning at Home, p. 1)

This publication from the Cooperative Extension Service is an excellent how-to for home tanning. Get your tips there.

Do I need to market my skins and hides?

If you are tanning skins for your own use, you don't need to market them at all. But if you don't market your skins and hides, you won't make money on them. Some people barter with skins, though this practice is increasingly rare. Locals will be able to identify methods and places for selling skins and hides.

Some trappers take furs to a taxidermist. Others sell them to fur buyers. The buyers take the furs to fur auction houses which in turn may sell them to an international fur buyer. From those buyers the fur dressers (tanners) buy the skins to treat them. The furrier (manufacturer) then buys the skins from the fur dresser and they are made into garments. The garments are purchased by the retailer who, in turn, sells them to the consumer.

As Alberta's Trapping and Conservation Manual, 1987 states, "The trapper should explore the marketing options available to him before committing his furs for sale. Knowing what options are available and what advantages and disadvantages are involved with each will help the trapper to select the best option to meet his needs.

"The two most common ways of marketing furs are to sell them either to a local buyer or to take or send them directly to an auction house or a receiving depot, to be forwarded to an auction house to be sold.

"The local buyer is an independent businessman who offers the convenience of being readily available and offering immediate payment to the trapper. The trapper also has the choice of either accepting the offer or going elsewhere.

"The receiving depot will give the trapper a partial payment in advance for his fur, obtain export permits if the fur is to be shipped, and forward the fur to the auction house.

"The auction houses offer such services such as drumming (which may up the grade of a pelt), having expert and standardized grading, access to a wider range of buyers and competitive bidding. The trapper also receives a written record of his fur grades. A service fee or selling commission is charged when pelts are auctioned and there will be a delay in receiving the balance of the payment for the furs shipped.

"Fur should be taken when prime and sold or shipped to market as soon as possible. When this is done, the fur will fit readily into the normal grading lots and is more likely to obtain the best price.

"If fur is held too long, it will be of a different primeness than a majority of the fur being sold at that time. It may have to be sold as a small, separate lot where it is more likely to bring a lower price because of buyer resistance.

"If trappers place poor quality and/or carelessly handled pelts on the market, it will have the effect of pulling down the overall average price for the commodity. The trappers' image will also be tarnished. If only prime,well-handled pelts were on the market, buyers and manufacturers who normally buy poor quality furs would have to compete with other buyers and manufacturers for the better quality furs. This additional competition would have the effect of raising the average price.

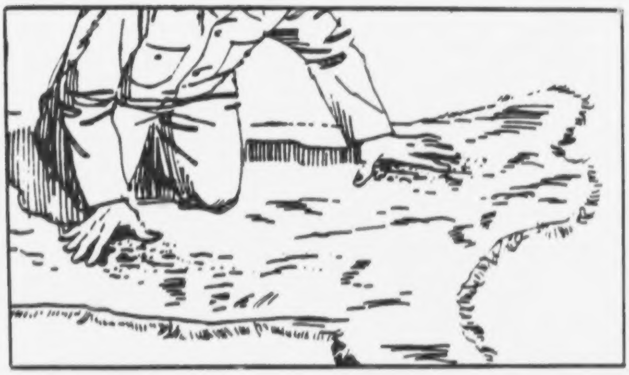
"Another problem is the practice where money appears to have been paid for a pelt having no value where, in reality, the value was deducted by the buyer from a better pelt sold by the same trapper. This has the effect of encouraging the continued dumping of unprime, poorly-handled or badly damaged pelts on the market.

"The buyer is motivated to do this in order to maintain good customer relations and the trapper becomes involved in this kind of a situation when he is unable to judge the true value and quality of his/her fur.

"Trappers and others in the industry should strongly discourage this practice as it adversely affects their image. In order to overcome this problem, a trapper is urged to take steps to learn better fur handling techniques, when to harvest furs, and the basics of how fur is graded in order to assess the value of his /her pelts.

"Most of the best sales occur from December to February, as this is when the greatest quantity of prime pelts are available and the greatest number of buyers are present to bid on the fur." (Trapping and Conservation Manual, 1987, pp. 454-455)

There are numerous fur buyers licensed throughout the State of Alaska. For further information, contact the Alaska Department of Fish and Game.



What business records do I need to keep related to trapping?

Businesses are made and broken by business techniques. A trapper needs to keep records and to determine income and costs. Basic business skills are very important to any small business person. Since you'll be self-employed, you will have to make quarterly payments to the Internal Revenue Service (IRS). Trappers are independent business people. Trappers, historically working in remote areas, have sometimes had little choice to whom they sell their skins. Today, with the U.S. mail serving even the most remote villages, times have changed. Some trappers have banded together with other trappers in fur cooperatives, to better control where their furs are auctioned. Such a business requires record keeping not unlike record keeping in any other business.

Means and Methods of Self-Sufficiency Gathering

Teacher Page

Competency:	**Understand means and methods of self-sufficiency gathering in Alaska**
Tasks:	Equip a self-sufficiency gathering operation Choose proper means of gathering Compare types of devices for gathering Gather safely Dry material Use survival skills in the out-of-doors Care for and store the products gathered

Introduction

Gathering is probably the oldest human occupation. Though largely replaced by agriculture in the United States, gathering still plays an important role in self-sufficiency in Alaska's economy. Berries grow in abundance in the state. In many areas gathered materials can make a major contribution to the local diet.

Overview

With ample public lands and few disturbances of the endemic wild lands, gathering will continue to play an important role in self-sufficiency in Alaska. Berries, roots, stems and leaves could count among the more under-utilized self-sufficiency resources in the state. Gathered materials will continue to be of importance in the self-sufficient lifestyle in Alaska.

Suggested Learning Activities

1. Invite local people to class who are experienced gatherers of berries, roots, stems, and leaves. Ask them to tell you or show slides illustrating what sorts of plants they gather, what safety and conservation precautions they observe, how they harvest their plants, and how they clean and preserve the products they gather.
2. Study plant field guides and other publications to become familiar with wild edible and poisonous species.
3. Take a field trip to gather plants for food. Carry appropriate survival gear and keep in mind tips learned from experienced gatherers regarding safety, conservation measures and harvest methods.
4. Upon returning from the field, immediately clean what you have gathered. Prepare it for storage by drying, canning, pickling or freezing.
5. Contact the Alaska State Museum for traveling multimedia kits and publications on Aleut and Koniag use of land and plant resources. Kits contain a variety of hands-on materials and activities suitable for all grade levels.

Resources

Alaska Native Foundation, 733 West 4th Ave., Suite 308, Anchorage, AK 99501

Alaska State Museum, 395 Whittier Street, Juneau, Ak. 99801. *Excellent multi-media kits and publications available on a variety of topics , with materials and activities suitable for all grade levels. 465-2901.*

Books:

Alaska Wild Berry Guide and Cookbook, Alaska Northwest Publishing Company, Box AA88, 130 Second Avenue South, Edmonds, WA 98020

Flora of Alaska and Neighboring Territories, Eric Hulten, Stanford University, 1974.

Handbook of Wild Edible Plants, Euell Gibbons and Gordon Tucker, Donning Company, Virginia Beach, 1980.

Root, Stem and Leaf: Wild Vegetables of Southeast Alaska, by Glen Ray, South East Regional Resource Center, 210 Ferry Way, Juneau, AK 99801. *Soon to be reprinted.*

Wild Edible and Poisonous Plants of Alaska, Cooperative Extension Service, University of Alaska, 1976.

Means and Methods of Self-Sufficiency Gathering

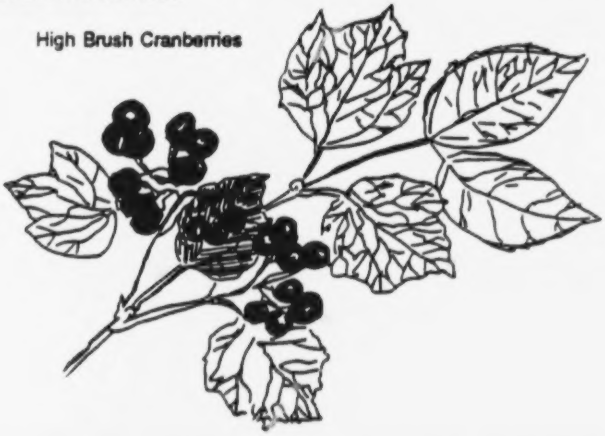
What equipment do people usually use for gathering?

Gathering is among the oldest of endeavors. It depends on what you are gathering; for berries people use a collection of pails and buckets. Plastic bags are usually not suitable because they don't protect the berries and don't allow them to breathe. Sunshine can heat things up quite a bit in a plastic bag. Tupperware or other plastic containers are probably best; they have lids, can be stacked, and will keep the berries in manageable quantities. Berries in such containers can be carried in a backpack or other sack without being crushed. For roots and stems a small shovel may be required as well as a good knife. Collapsible military shovels are handy for digging–they're cheap, and portable. A good-quality knife will serve the gatherer better than one of cheaper quality.

How do I gather different plants?

Glen Ray in Root Stem and Leaf: Wild Vegetable of Southeast Alaska says:

"Using wild vegetables either privately or as part of an educational program involves a concern for how the vegetables are gathered. The user of wild vegetables should understand the spirit of a 'traditional conservation' point of view. Gathering is done with respect for the earth and with an awareness of how the gathering process should harmonize with the natural environment.



High Brush Cranberries

"One contemporary conservation strategy stresses not using the natural environment. This well-intentioned concern for preserving parts of the earth from human disruption may be justified in areas of high human population or where abuse and destruction threaten whole animal and plant communities. Another conservation strategy stresses the desire to manage the natural environment. This view allows for restricted use of portions of the natural environment for economic and recreational objectives. Clear-cut timber operations, dams, mineral exploitation, parks, hunting and fishing restrictions are examples of contemporary land management.

"The term 'traditional conservation' as used differs from the above-mentioned conservation strategies. Traditional conservation is neither mainly concerned with saving the environment nor with specific resource exploitation. People involved in traditional conservation take from the natural environment what they need but not to the extent that the environment is damaged beyond the limits of its use. Traditional conservation involves using simple technology and being careful that the plants and animals being utilized have ample opportunity to regenerate.

"In modern times people have available sophisticated technologies for accomplishing what previously had been done using simple tools This power, coupled with a naivete of ecological relationships despoils the natural environment. An example of this disaster was related by a person from Sitka: 'While berry picking on a drizzly southeastern day a man and woman driving a new-looking four-wheel drive pick-up were observed driving off the road and into a berry patch. The couple got out and began picking the blueberries and huckleberries available. The couple was not dressed for the weather and so must have been frustrated by the drizzle. They began stripping the branches off the bushes and throwing them into the bed of the pick-up. when they had a large enough load, off they went, driving back to the road and off to, most probably, pick their berries in a dry garage'.

"A simple technology, when applied to berry picking, involves walking among the berry bushes with a basket or bag tied to a length of yarn and hung around one's neck. Respect for ecological relationships translates itself into taking only as many berries as needed, not damaging the environment beyond what was used and leaving some berries for birds, insects, bears and regermination.

"Traditional conservation techniques are very simple. Essentially, this type of conservation is based on respect for the earth and the natural environment of which we are a part. Expressions of an attitude of traditional conservation fluctuate with the situation. Following is a listing of elementary rules to help one internalize the process of gathering with an attitude of respect for the natural environment.

- *Learn the habitat and condition under which each plant flourishes.*
- *Know the area in which you live well enough to know where each plant can be abundantly found.*
- *Take time to ask Native elders if the locale where you would like to harvest a plant is not already the harvesting spot for a group of people.*
- *Find a place to harvest not already harvested.*
- *If the plant seems not to be abundant in the area where it is found, it would be best not to harvest until it can be found growing abundantly. If one feels that some harvesting is possible then take only a few plants or only some portion of several plants.*
- *Leave the roots of perennials intact along with a portion of the leaves so the plant can regenerate itself.*
- *Take only a part of a plant so as to let the plant flower and reproduce.*
- *Take only what can be processed and used.*
- *Take time to enjoy the process and appreciate the surroundings.* (Root, Stem and Leaf, 1981, pp. 11-12)

What do I use for gathering?

As Glen Ray notes in **Root Stem and Leaf** "the collector of wild vegetables must be considerate of the plant communities and environments in which these vegetables grow. ...Essentially harmonious wild vegetable gathering depends on the internalized values of the collector. "

Gathering in Alaska varies widely. In Southeast Alaska you could get to a site by ATV or skiff; on the North Slope you might walk to a good berry-picking site, take a river boat or ARGO ATV. Some use a pickup truck or, in winter, snow machine or dog sled. Locals will inform of the means of transportation to the gathering site.

What safety measures should I take?

You always have to keep safety in mind in Alaska. Too many people are lost in simple endeavors like berry picking. The weather can change quickly, something can happen. It is always important to tell someone reliable where you are going and when you will return. Carry warm clothing with you, rain gear and basic survival equipment.

How do I clean and store the material?

As Glen Ray notes in **Root Stem and Leaf**, clean material thoroughly. As Ray states, "many of the wild vegetables require special processing to enhance their flavor or to make them safe for eating... There are essentially four ways to preserve wild vegetables for long-term storage: pickling, freezing, dehydrating and canning. Each vegetable will be altered in flavor, texture, color and nutrient value according to the manner in which it is processed and stored. From the moment the vegetable is harvested it begins to decay. Storage by one of the four above-mentioned methods of preserving slows the rate of decay. Freezing under correct conditions is the best way to preserve the highest nutrient content but it is not always convenient or practical. ... Choice of how to store an excess of any particular vegetable depends on resources available to the individual, the manner in which the vegetable will be used as a food and concerns for nutrient retention." (Root, Stem and Leaf, pp. 17-18)

How do I dry it?

Many gathered products are dried in Alaska. Drying reduces weight and bulk, preserves foods, sometimes enhances flavor, and is usually easy and cheap to do. Most gathered fruits and berries can be dried, even strawberries, though with the availability of easy canning materials and the electrification of even rural villages, canning and freezing are often the preferred means of preservation. Drying is also called dehydration.

What wilderness survival skills should I have?

Depending on where you gather, your wilderness survival skills may be called into play. A skiff motor can break, a landslide can block your passage, someone in your party could fall and break a leg. Be prepared. Knowing how to construct a simple shelter, how to get a fire started, how to signal for help, and basic first aid skills may mean the difference between life and death. An important element of survival is your own attitude. A familiarity with survival skills will boost your confidence and improve your chances in an emergency.

Gathering Seafoods and Shellfish
Teacher Page

Competency:	**Gather seafoods**
Tasks:	Obtain proper tools and clothing for seafood Gather shellfish on the beach Explain the hazards of paralytic shellfish poisoning Prepare shellfish for eating Gather seaweed Wash seaweed Cook, pickle, or preserve seaweed

Introduction

Taking shellfish for self-sufficient purposes has increased dramatically in recent times. The Alaska Department of Fish and Game estimates that in 1985 30,000 user-days of effort were directed toward clam digging between Cape Kasilof and Anchor Point alone, with an estimated total of over 1,000,000 razor clams taken. Though paralytic shellfish poisoning (PSP) is a hazard throughout the state (especially in Southeast), shellfish contribute in many areas to the self-sufficient lifestyle.

Overview

Shellfish in Alaska currently is a very viable foodstuff. Despite the hazards of paralytic shellfish poisoning, and despite the fact that personal use or recreational beaches are only tested on a random basis for PSP, shellfish continue in importance as a foodstuff.

Suggested Learning Activities

1. Invite local Native elders and other self-sufficient seafood gatherers to class to discuss their methods of digging for shellfish, collecting seaweeds, and preparing these seafoods for eating or storage. Slides would help in the identification of these organisms.
2. Study tide books to find a good time to take a beach field trip with a very low tide.
3. **If you live in the Cook Inlet area or westward,** take a field trip to a **clean** certified clamming beach on a day with a very low tide, dressing appropriately for cold, wet weather, wearing rubber boots. Use a shovel to dig for clams, placing them in a bucket of salt water with cornmeal to clean them. Allow them to sit live in the salt water for at least 24 hours.
4. Prepare clams for eating: remove their necks, eviscerate, and steam them just until they open (for about one minute).
5. On another day with a very low tide, take a field trip to a clean beach to gather seaweed. Again, dress warmly and wear boots. Use field guides to identify edible seaweeds. Wearing rubber gloves, cut the seaweeds from their holdfasts using a good sharp knife. Place in a garbage bag or large bucket. When finished collecting, carefully clean the seaweed. Dry or pickle to preserve the fruits of your labors. Store in airtight jars.

Resources

Department of Environmental Conservation, P.O. Box O, Juneau, AK 99811-1800 (907) 465-2606 *Ask for the pamphlet "PSP What you should know before you go clamming."*

Alaska Department of Fish and Game, Box 3-2000, Juneau, AK 99802-2000 (907) 465-4107 *The pamphlet "Cook Inlet Razor Clams" is very informative.*

Books and Pamphlets:

"Paralytic Shellfish Poisoning," Cooperative Extension Office, A-00220

101 Simple Seafood Recipes, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

Vegetables from the Sea, To Help You Look and Feel Better, by Seibin & Teruko Arasaki, Japan Publications Inc., Tokyo, 1983. *A complete guide to seaweed nutrition and cooking.*

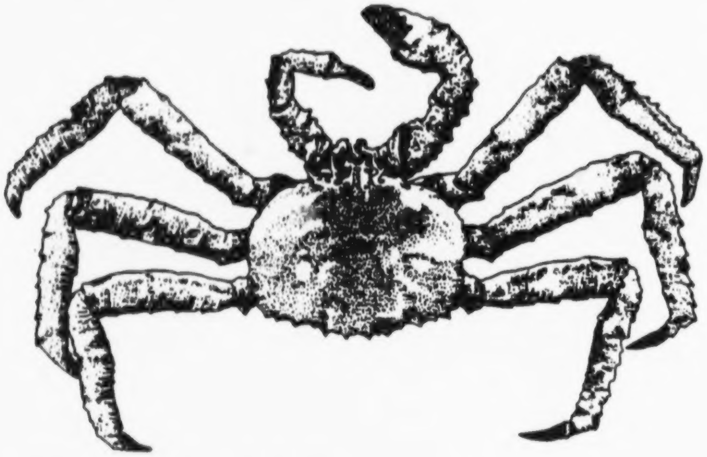
Gathering Seafoods and Shellfish

What tools and clothing do I need for seafood gathering?

As noted in the Anchorage Daily News, "for clamming you'll need a clamming shovel (a curved, narrow-bladed shovel that sells for under $10), a bucket and a fishing license which can be purchased at just about any store that sells sporting goods. Shellfish regulations are included in the sport fishing regulation booklet, available through Fish and Game and just about any store that sells fishing tackle.

"To fully appreciate clamming, it helps to stay warm and dry. Waterproof pants and jackets, rubber dishwashing gloves with wool or polypropylene liners and rubber boots with extra-warm socks are recommended." ("Shellfish Pleasure can you dig it?," Anchorage Daily News, 5/12/88, p. d-11) Such clothing will help you to stay warm and dry when you collect seaweed as well.

Seaweeds you might collect include black seaweed *(Porphyra Laciniata)* and bull kelp *(Nereocystis luetkeana)*. To properly identify the seaweeds and the proper time of year for gathering, local knowledge is important. Find out how elders or other locals gather and prepare seaweed. A good identification book is a must. A good knife is imperative. A net to bring the slippery seaweed in the boat will help.



How should I gather shellfish on the beach?

You'll need a place to gather. According to the National Marine Fisheries Service and the Alaska Department of Environmental Conservation, residents of Southeast Alaska are advised not to eat bivalve shellfish because it is so difficult to predict the presence of the *dinoffagellate*. It usually seems to be more present during the summer. Additionally these species take up, concentrate and rid their bodies of the toxic organisms at different rates. Mussels, butter clams, and steamers are the worst offenders for PSP.

In Cook Inlet and westward, PSP has not been a major problem. However, users are advised to dig only from certified beaches such as those on the Kenai Peninsula and around Deep River.

Paralytic shellfish poisoning (PSP) is a possibility on nearly every beach in the state, though there are certified beaches south of Anchorage. Contact the Alaska Department of Fish and Game for their exact location. Minus tides (when the low tide is less than zero) will greatly increase the area in which to dig. You'll need a tide chart so you can show up at low tide. Tide books showing approximate times and tides are widely available at sport and tackle shops.

Remember, you're not "gathering shellfish on the beach." You may have to dig for them. "You're not digging potatoes," says Soldotna biologist Dave Nelson, author of the booklet "Cook Inlet Razor Clams," available through the Alaska Department of Fish and Game.

As Nelson continues, "plant the tip of a shovel, scoop side away from the clam, about three to six inches from the show. Sink the blade straight down, and scoop straight up. Always move the blade of the shovel away from the clam; if you pry, you may crush the shell.

"After two or three scoops, reach down into the hole and grab the clam. Calmly." (From *"Cook Inlet Razor Clams"*, quoted in *"Shellfish Pleasure can you dig it?*, Anchorage Daily News, 5/12/88, p. d-11)

What are the hazards of paralytic shellfish poisoning?

According to the Anchorage Daily News, "Humans get PSP when they eat shellfish that, in turn, have been eating a tiny, toxic organism called dinoflagellate. Symptoms of PSP begin with a numbness, burning or tingling sensation in the tongue, gums, lips or face, and spread throughout The body. Although it's rare, a victim of PSP can die of respiratory paralysis.

"PSP is much more of a problem in Southeast Alaska than in the Cook Inlet region. Since 1973, 98 cases of PSP have been documented in Alaska, according to state medical epidemiologist Mike Beller. Twenty cases have been reported in Southcentral Alaska, 17 of which were from butter clams in the Homer area; the rest occurred in Southeast. No deaths were reported.

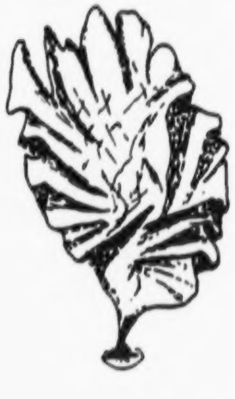
"PSP toxins accumulate in a clam's digestive track. When cleaning razors, it is very important to remove all the dark areas, which are the digestive tracks." ("Shellfish Pleasure Can you dig it? Anchorage Daily News, May 12, 1988, p. d-11)

How do I gather seaweed?

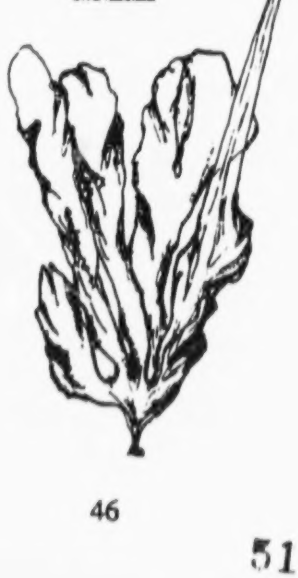
Sea weeds can be gathered on the beach, at the mouths of streams, or from rocks along the sea shore. Many will be gathered from boats or skiffs. As Glen Ray says about black seaweed: "Try not to rip the holdfast from the rock by pulling the seaweed. Instead cut the seaweed thereby leaving a portion of the algae attached to the rock. This will allow it to regenerate itself and be there again when you next need it." (Root, Stem and Leaf, p. 25)

Several seaweeds have been artificially cultivated in seaweed farms in Japan.

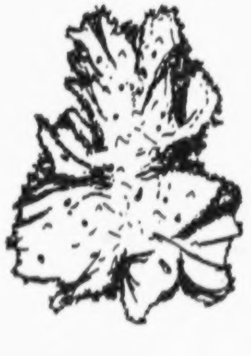
Ulva lactuca



Ulva fasciata



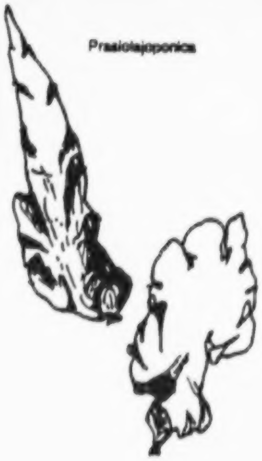
Monostroma latissi



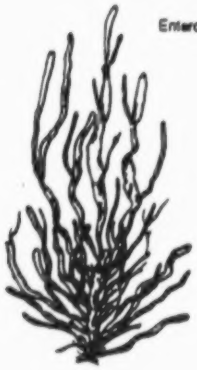
How should I clean and dry seaweed?

As Glen Ray continues concerning black seaweed: "Check the freshly picked seaweed for clinging crustaceans and debris. Partially dry seaweed by laying it on a sheet outside on a fair day. Before completely dry cut into small pieces and set out once again to dry. Turn the seaweed often to ensure uniform texture. Be sure seaweed is dried thoroughly and store in air tight containers. It will blacken as it dries." (Root, Stem and Leaf, p. 25)

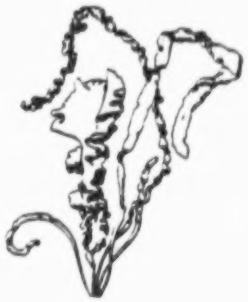
Concerning bull kelp, Ray notes: "For use as a pickle, desalt stems and bulbs by soaking in changes of fresh water for several days. Blades can be sun-dried. Also sun-dry herring spawn-laden blades, then hydrate before use. The blades are usually tasty only after drying." (Root, Stem and Leaf, p. 29)



Prasiolajaponica



Enteromorpha prolifera



Enteromorpha linza

What are some other ways to prepare and preserve seaweed?

Have you ever tried kelp pickles? Dill or sweet, you won't find a taste treat much better. Cook, pickle, or dry seaweed. For bull kelp Ray says: "various types of pickles and relishes are the major uses of bull kelp as food. The hollow stipes are washed, peeled and used in the same way as green cucumbers or tomatoes." (Root, Stem and Leaf, p. 29)

As Glen Ray notes, to preserve black seaweed, "place thoroughly dry seaweed in airtight containers to avoid molding. Plastic bags are not moisture-proof enough: use jars. If kept completely dry the seaweed should be good for a year or more." (Root, Stem and Leaf, p. 29)

The Arasakis describe the following general process for harvesting and preparing seaweeds:

1. Wash them immediately in freshwater to desalt them.
2. Dry them fast in the shade.
3. Store them in dark, dry places. (Vegetables from the Sea, p. 88)

Gathering and Preparing Wild Medicinals

Competency: **Gather and prepare wild medicinals**

Tasks:
Identify materials appropriate for medicinal purposes
Choose proper means of gathering
Equip for successful gathering
Differentiate between poisonous and non-poisonous plants
Care and store materials gathered
Use wild medicinals

Introduction

Wild medicinals have contributed to healing for thousands of years. While not a substitute for the modern health system, the gatherer should have some knowledge of potential medicinal values of a variety of plants. Local elders and outdoorspersons can inform of the value of various medicinals.

Overview

Though there is a continuing interest in wild medicinals, and the interest in homeopathic medicine reinforces that interest, the field will probably remain little more than a sideline for the self-sufficiency gatherer. While wild plants have great potential as dietary supplements, their use as medicinals requires considerable knowledge and experience, and is not suggested for the lay person. However, the person who supplements their diet with wild plants can tap into a hearty source of nutrients.

Suggested Learning Activities

1. Invite local elders, homeopaths, and other people who are experienced in the gathering and preparation of wild medicinal plants. Ask them to show slides or otherwise identify medicinal species and their appropriate medicinal use. Ask them where you might find these plants and how to gather, clean, and store them. Find out how to distinguish medicinal plants from similar poisonous species.
2. Study plant guides and keys so that you are familiar with the identification of the medicinal plants you are going to collect.
3. Take a field trip to gather medicinals. Be prepared for a turn in the weather, carrying extra clothing, food, firestarter, signalling devices, and insect repellant. Be sure that you aren't harvesting an area where others have previous claims. Put the plants you gather into a bucket or cloth bag. Remember to check with an expert before using anything you collect, so that you don't poison yourself or others. Avoid mushrooms unless you are accompanied by someone who really know ablut them.
4. Take photographs of various wild medicinal plants and prepare a poster displaying these plants and descriptions of their uses. Include photographs of poisonous species that may be found in your area or elsewhere in Alaska.
5. Clean and dry your plants by hanging.While your plants are hanging is a good time for you to become very proficient in the appropriate prescription of medicinal plants: read and study on this topic very carefully.

Resources

Yukon-Kuskokwim Health Corporation, P.O. Box 528, Bethel, AK 99559 (907) 543-3321. *This agency has invested a lot of time and money in gathering information on nutritional values of subsistence foods. Currently completing a documentary on traditional medical practices with Dr. Neil Murphy of Mt. Edgecombe Hospital.*

Books:

Alaska's Wilderness Medicines. Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

The Alaska-Yukon Wild Flowers Guide. Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

Alaska's Wilderness Medicines. Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

Flora of Alaska and Neighboring Territories. ***Eric Hulten, Stanford University, 1974.***

Handbook of Wild Edible Plants. Euell Gibbons and Gordon Tucker, Donning Company, Virginia Beach, 1980.

Medicinal Plants of Alaska. by Teri Viereck, Tanana Valley College Division of General Education, 1982

"Nauriat Niginaqtuat–Plants That We Eat," by Anora Jones, Traditional Nutritional Project, Maniilaq Association, 1983. *Maniilaq Assoc., P.O. Box 256, Kotzebue, AK 99752 (907) 442-3311.*

Plant Lore of an Alaskan Island. Frances Kelso Graham, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

Root, Stem and Leaf: Wild Vegetables of Southeast Alaska. by Glen Ray, South East Regional Resource Center, 210 Ferry Way, Juneau, AK 99801. *Soon to be reprinted.*

Wild Edible and Poisonous Plants of Alaska. Cooperative Extension Service, University of Alaska, 1976.

Slide Show:

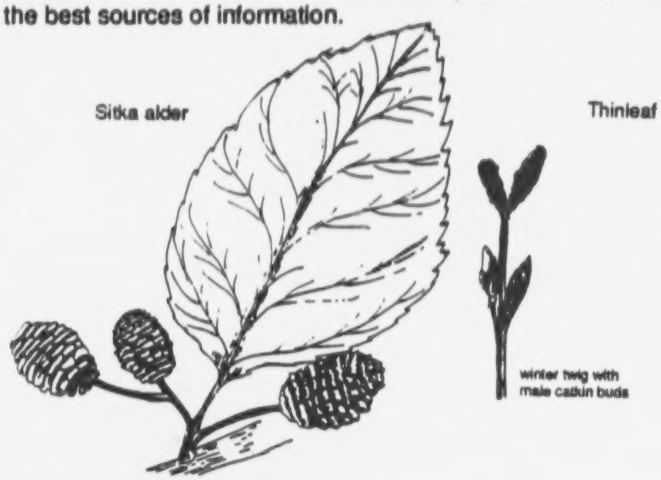
"Wild Edible Plants of the YK Delta," by Mary Gregory, available from Alaska Area Native Health Service, Health Education Office, P.O. Box 107741, Anchorage, AK 99510-7741. (907) 279-6661. *Mary Gregory is also available for classroom teaching and nature walks in the Bethel area. Contact her at YK Health Corporation.*

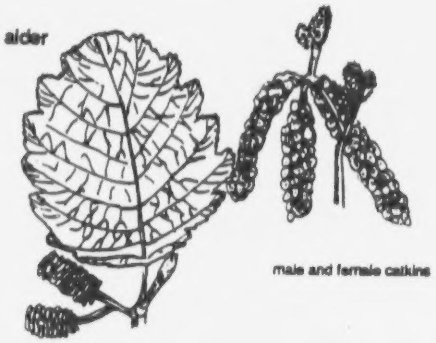
Gathering and Preparing Wild Medicinals

What are some materials appropriate for medicinal purposes?

Many wild roots, stems and leaves have nutritional value. For example, bull kelp, a common seaweed, is high in potassium, bromine, and iodine. The common dandelion is known for its values as a diuretic (helping to get rid of extra water), a laxative (helping to relieve constipation), tonic (making you feel refreshed), hepatic (tending to strengthen the liver), aperient (mild laxative) and stomachic (aiding digestion). However, one would have to eat much more than a single serving to gain medicinal effects, but it seems that dandelion is good for just about everything!

Plants appropriate for wild medicinals may be identified in a variety of plant keys, but, as medicinals are generally not recognized by the Western medical community, proceed with caution. Find out methods of gathering, uses, and expected results from those who have used the plants. Elders, and those who have lived in an area for some time are the best sources of information.


Sitka alder
winter twig with male catkin buds



How do I gather wild medicinals?

Gather wild medicinals much as you would gather wild food plants, making sure to gather the plant at the time of season when it is most useful to you. Plant keys and guides will inform you when to gather. You don't want to destroy the plant when gathering it, so a bucket or cloth sack may help you in your gathering. You'll need to know the area in which you're gathering to find the best specimens possible, and to make sure you're not harvesting an area which is already the harvesting spot for a group of people.

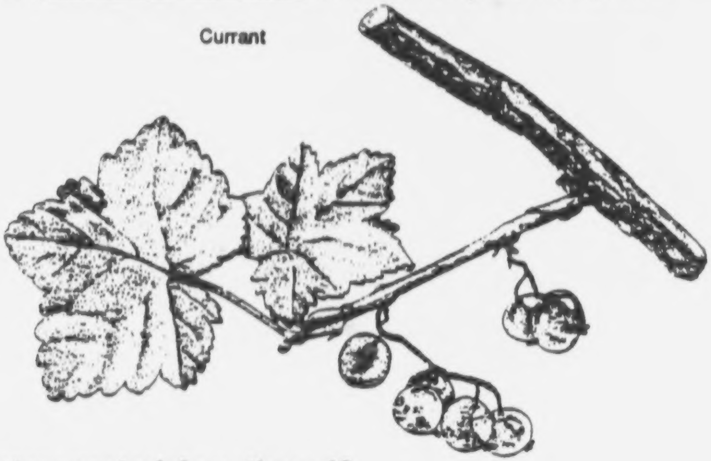
What do I wear when I'm gathering?

The great hazard in Alaska when in the out of doors is hypothermia. When you are out, prepare for the unexpected turn in the weather. Even if it's hot when you go out, a backpack with wool or pile clothing for an emergency, emergency signalling devices, some food, a way to start a fire just might make the difference between your surviving and not. Remember to not only protect yourself from the weather, but from insects and thorns. Too many people go someplace just for the day, have something unexpected occur, and are unable to return. Be prepared.

How do I differentiate between poisonous and non-poisonous plants?

It is of course imperative that you are able to recognize poisonous plants. If you are searching for a wild medicinal, you certainly would not want to run across something which could kill you! Of particular notoriety are water hemlock, baneberry, and death cap mushrooms. Learn to recognize these plants; they can make you very sick, or in some cases, can kill.

As Glen Ray notes in Root, Stem and Leaf, "It should not be assumed that potential poisons can occur only in wild plant foods. Many plant foods commonly available in grocery stores contain naturally occurring substances which have been identified as harmful to human beings." As Ray continues, "under ordinary conditions and with most people, normal bodily processes can handle small quantities of a variety of potentially poisonous substances. As long as The food is eaten in moderation and as part of a well-balanced diet there is little threat." (Root, Stem and Leaf, pp. 809) Nonetheless, know what you're doing when collecting wild medicinals.

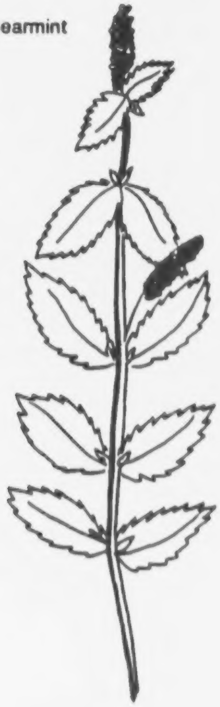


How do I care and store materials gathered?

Most wild medicinals are dried, though drying can alter the properties of some plants. Some materials are not stored at all, but must be used fresh. The person advising you on the medicinal will indicate its special handling.

How can I use wild medicinals?

Much of the use of wild medicinals has been supplanted by modern medicine. However, herbal teas and other such wild plants as well as an interest in homeopathic medicine has revived some interest in wild medicinals.



Means and Methods of Self-Sufficiency Fishing

Teacher Page

Competency: **Understand means and methods of self-sufficiency fishing in Alaska**

Tasks:

Choose proper means of self-sufficiency fishing, abiding by state laws
Equip a self-sufficiency fishing operation
Construct fish nets
Construct fish wheel
Use set nets
Use dip net
Eel fish with dip net
Use a fish wheel
Mend torn nets
Fish safely
Care for the catch
Safely operate boats
Troubleshoot outboard motor
Explain what to do if you fall overboard
Safely survive in the out of doors

Introduction

Fishing contributes significantly to the self-sufficient lifestyle in Alaska. Alaska provides ample protein to thousands of self-sufficient fishers. Over 20% of all the U.S. commercial fishing industry is in the state. Most self-sufficient Alaskans are involved in some form of fishing.

Overview

Fishing is a growing industry in Alaska, and one with continued importance for self-sufficiency. Recent reports by the U.S. Surgeon General calling for less fat in the American diet further verify the food value of fish. Efficient, legal, ethical harvest of Alaska's fish resources will continue to have the prominent role in Alaska's self-sufficient lifestyle.

Suggested Learning Activities

1. Invite several people to class who have experience with subsistence fishing using set and drift gill nets, dip nets, fish wheels, and trolling poles. Ask them to show slides or to otherwise discuss their experiences and the necessary materials for each method. Ask about hazards involved, gear problems, size of subsistence harvest, mishaps encountered in the process of fishing.
2. Choose a means of self-sufficiency fishing to investigate. Read the state regulations about your chosen method. Study other sources of information so that you know as much about the method as possible. Accompany a subsistence fisher who uses that method for a few days. Interview your subject and observe that person's activities, assisting wherever possible. Write about what you learn.
3. (Best in small groups): participate in a self-sufficiency operation: choose a method for the group, considering different costs, equipment availability, etc. Purchase necessary materials and build equipment (such as fishwheels, nets) used in the fishing operations. Fish with your gear, repairing whatever breaks or malfunctions and practicing safety in and out of boats. Clean and store your catch.

Resources

Alaska Department of Fish and Game, Box 3-2000, Juneau, AK 99802-2000 (907) 465-4107

Books, Pamphlets, and Articles:

The Alaska Almanac, Alaska Northwest Publishing Company, 137 East Seventh Avenue, Anchorage, AK 99501

Alaskan's How to Handbook, by Joe Dart, Interior Alaska Trapper's Association, P.O. Box 60418, Fairbanks, Alaska 99706, 1981. *Includes an article on weaving your own salmon net.*

Alaska's Salmon Fisheries, Alaska Geographic, Volume 10, Number 3, 1983, P.O. Box 93370, Anchorage, AK 99509. *Full of color photos. Available at most Alaskan bookstores.*

Fishing Alaska, *with Jim Repine,* Wilderness Publishing, 511 West Seventeenth Ave., Anchorage, AK 99501

Fishwheels and How to Build Them, Kathleen Lynch, Adult Literacy Laboratory, University of Alaska-Anchorage, January, 1979. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

"Making a Fish Net," by Mildred Jacobsson, Adult Literacy Laboratory, University of Alaska-Anchorage, July, 1977. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

"Gillnet Hanging," Paula Cullenberg, Alaska Marine Advisory Bulletin #29, April 1987.

Industrial Education Resources, Vocational Education Library, Office of Adult and Vocational Education, P.O. Box F, Juneau, AK 99811. *Includes a vocational section on commercial fishing.*

"Net Mending and Patching", P.D. Lorimer, Pacific Sea Grant Advisory Program, PASGAP 9, Reprinted January 1982.

"Night of the Eels," Story and photos by George Bryson, Anchorage Daily News, *We Alaskans,* December 6, 1988, pp. F-14 to F-16.

Outboard Motor Service Manual, Intertec Publishing Corporation, P.O. Box 12901, Overland Park, KS 66212

"Salmon Fishing Methods of the Yukon River," Wildlife Use Notebook Series, Alaska Department of Fish and Game, Box 3-2000, Juneau, AK 99811

Small Engines and Outboard Marine Mechanics Curriculum, Office of Adult and Vocational Education, Alaska Department of Education, P.O. Box F, Juneau, AK 99811

"The Dipnet and Fishwheel Fisheries of the Copper River, 1982," by Lee Stratton, Alaska Department of Fish and Game, Division of Subsistence, Technical Paper Number 37.

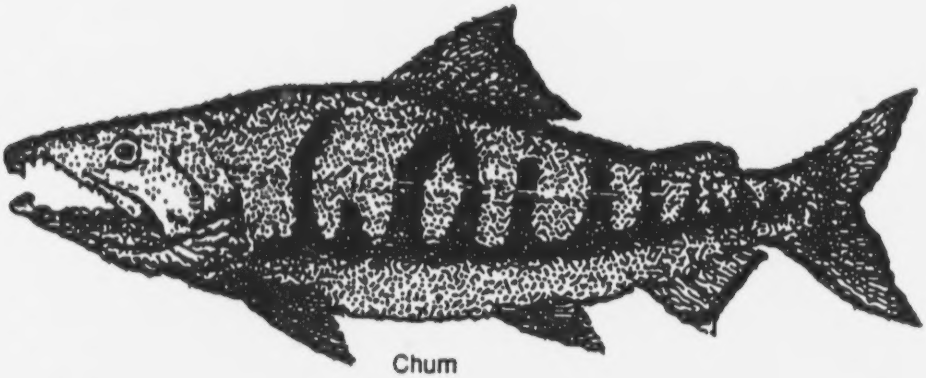
Means and Methods of Self-Sufficiency Fishing

What means do I choose for my self-sufficiency fishing operation?

The best way to learn self-sufficient fishing techniques for your locale is from someone who practices them. Techniques on baiting hooks, on using a net, vary widely not only among places, but among people as well. You may develop techniques of your own which are a variation on other techniques. Whatever the case, you must abide by state law. Besides set nets, dip nets and fish wheels self-sufficient and subsistent fishers use trolling poles and hydraulic or hand gurdies or regular reels.

What equipment do I need?

Different fisheries require different equipment. A person aiming for a self-sufficient lifestyle may qualify as a subsistence user. Sports-caught fish may supplement your diet–and throughout Alaska they do. Commercial fishing equipment includes purse seines, drift gill nets, set gill nets, fish wheels, and trolling gear. Subsistence fisheries include fish wheels, set nets, drift nets, dip nets, and pole and line. Some self-sufficient fishing operations use gear similar to the commercial fisher.



Chum

How do I build nets?

Today's nets are generally store-bought. The introduction of synthetic fibers in the 1950s brought nets of greater strength and longer life. As Paula Cullenberg notes, "salmon gill nets are machine-made from multifilament strands of nylon." Such commercial nets are purchased by mesh size. As Paula notes, "to find the mesh size, take the top and bottom knots of one diamond in the mesh and pull them apart so that both sides of the diamond are together.

The distance from the top of the top knot to the top of the bottom knot is the mesh size. ...A net salesman [or woman] who is experienced in your area may be able to give you a good idea of what local fishermen are using. He [/she], more than any single fisherman [person], may have seen the range of gear that is used in your region and will know the options available to you." ("Gillnet Hanging," pp. 4-5) Paula's excellent publication demonstrates the ways that nets are built using commercial webbing, corkline, corks, hanging twine, and put together using net needles. This publication is available through the Cooperative Extension Office.

How do I construct a fish wheel?

According to Fishwheels and How to Build Them, "if you are just fishing for yourself and not selling fish (subsistence fishing) there are a number of rivers in Alaska where fish wheels are allowed. However, most people use gill-nets rather than fish wheels except on the Yukon, Tanana, Kuskokwim and Copper Rivers.

"For subsistence fish wheels a permit is generally not required except in certain areas. A permit is required only in areas where it is easy for lots of people to get to, for example areas near roads. This includes the Copper River and short sections of the Yukon and Tanana rivers. The Tanana above the Wood River requires a subsistence permit. This is the section of the river from just beyond Nenana, which includes the Fairbanks area." (Fishwheels and How to Use Them, p. 8)

According to the Alaska Almanac, "currently there are 166 limited-entry permits for the use of fish wheels by commercial salmon fishermen on the Yukon River system–the only district where subsistence fishermen use the same gear. Commercial and subsistence fishing times with the wheels are regulated. (Alaska Almanac, p. 91) Commercial and subsistence fishing regulations are available from the Alaska Department of Fish and Game and from Fish and Wildlife Protection officers.

As Fishwheels and How to Build Them continues, "whether you are fishing commercially or for subsistence, there are some rules that have to be followed regarding fish wheels. For example a fish wheel must be marked clearly with the owner's registration number. The figures must be at least six inches high, facing mid-stream of the river. In the Yukon and Tanana Rivers fish wheels have to be set at least 200 feet apart and at least 200 feet from any other commercial or subsistence fishing gear such as a set net.

"The typical Alaskan fish wheel is mounted between raft logs. Two basket wheels are typical, but occasionally a three-basket wheel is seen." (Fishwheels and How to Use Them, p. 9)

Fishwheels and How to Use Them suggests that for tools and materials, you will need an axe, chainsaw, large wood chisel, a sledge hammer, a carpenter's hammer, and a large drill. For materials you will need spruce logs for the raft, 24-30 feet long, spruce or birch poles for the wheel, frame and stanchions (approximately 60-75 poles, 14 feet long, 3-4 inches in diameter), boards for paddles, chutes, and storage box. Additionally, you will need wire mesh, nails, staples, 12-inch spikes or wooden pegs and large steel pipe sections for axle ends, or wire for wrapping axle ends. The booklet lists joist lumber for stanchions, joining raft logs, etc., and framing lumber 2 x 4s to frame wheel and baskets as optional. (Fishwheels and How to Use Them, p. 18)

According to the same booklet, "for the raft you will need six to eight large spruce logs. Birch is sometimes used in fish wheel construction, but it is said spruce logs last longer. The logs should be about 24-30 feet long and about 20 inches in diameter. The raft logs should be peeled and partially dried so they will float well. The logs should not be too dry, however. Dry logs are more likely to rot after long periods in the water. Peeling the logs also helps prevent them from rotting. Where large driftwood logs are available, these are sometimes used instead of new logs." You may also make long floats of plywood and 2 x 4s and filled with styrofoam.

"The actual building of the raft should be done in shallow water so it can be floated into position later. Lay the logs parallel, three or four to a side, leaving a space in the middle for the wheel. The logs are then joined together at the ends with either cross-logs or joist lumber (2 x 8s). Use 12-inch spikes for nailing the end pieces." (Fishwheels and How to Use Them, pp. 19-20)

The actual construction of the fish wheel involves a bearing block, its framework, attachments, fish storage box, basket framing, slope board or chute, basket covering, axle, and possibly an underwater fence. In clear water a log seine net trailing off of the fishwheel helps to funnel fish into the baskets. A publication like the one mentioned would be very helpful. The best place to find out methods of construction is to view some fish wheels or to ask someone who constructs them.

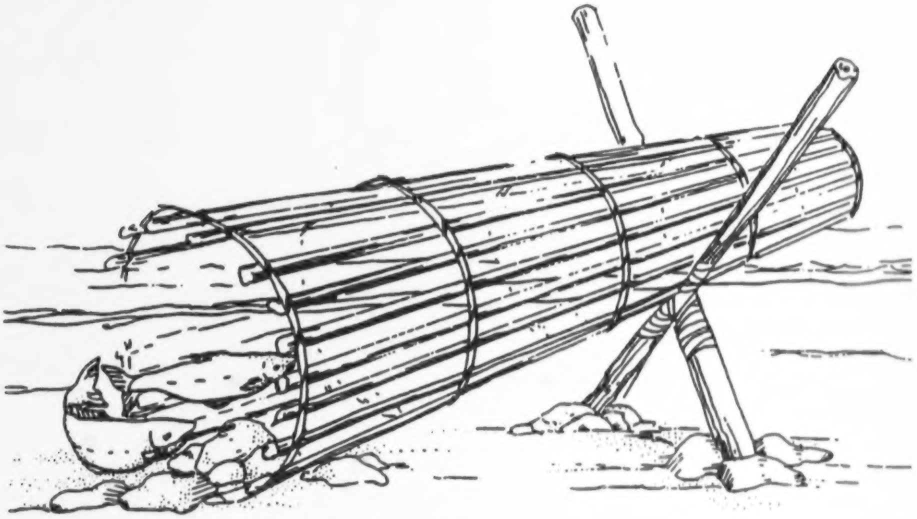
How do I position set nets and gill nets?

As the Alaska Department of Fish and Game notes, "set gill nets are usually 25 fathoms (150 feet) long or shorter. They are anchored at both ends, usually to a tree or post on the bank and to an anchor in the river. Set nets fish best at the edge of an eddy; when set in the current the nets quickly fill with floating debris. Because they are easier to use, set nets are the preferred fishing method for elderly or disabled people. Set nets are found throughout the Yukon River in Alaska. Read your fishing regs carefully to find out if set nets are legal in your area for your purposes.

"Drift gill nets are usually 50 fathoms (300 feet) long on the lower Yukon River, and somewhat shorter on the middle river. Drift gill nets are not anchored in the river, but instead are attached to a boat and floated downstream with the current.

"Drifting requires a reasonably long, straight stretch of river with a bottom free of snags. Drifting fishermen make repeated sets, drifting down river, hauling in the net, motoring back up river, setting the net, and drifting down river again. Outboard motors greatly aid drift net fishing. Drifting is common on the lower and middle Yukon River." ("Salmon Fishing Methods of the Yukon River, p. 4)

Some salmon nets are hand-made. Shuttles, tools like seine needles, are loaded with seine twine, and woven by hand on a post. A spacer, a flat piece of wood, is used to tighten knots and even up spaces. Several publications above explain this process.



Drawn from "Indian Fishing" with permission from Hilary Stewart.

How do I use dip nets?

Dip nets are used for several types of fishing. Dip nets are large sack-like nets attached to long poles. They can be used to catch eels as they migrate up the rivers under the ice. On the Yukon River, a hole is chopped in the ice and eels are scooped up as they pass by. Dip nets are also used to fish for salmon, or other fish. Some fishers have poles which extend. Dip net fishers may wear some form of kneeboots, hipboots or waders. Some wear wet suits rain jackets and pants, or plastic garbage sacks to keep dry while wading in the river.

For salmon fishing, the dip net user may remain remain on the shore, keeping the net stationary, or sweeping the river with the net. Fishers may stand deep in the river, from knee to chest deep, sweeping with the nets. Some fishers are reported to "bounce" down the river in deep water, holding a lifeline on the shore. ("The Dipnet and Fishwheel Fisheries of the Copper River, 1982, pp. 56-57) A common place for dip net salmon fishing in Alaska is the Copper River, in the area of Chitina. Some fish wheeler users may also participate in the dip net fishery.

How do you fish for eels fishing with dip nets?

The eels which travel up the Yukon and other rivers in November are not eels at all, but arctic lampreys. According to the *Anchorage Daily News*, there are two types of arctic lampreys found in Alaska: *Lampetra japonica*, a species that grows to adulthood (about 11-15 inches long at maturity) in the Bering Sea and migrates up various rivers in the winter, and *Lampetra lamottei*, a much smaller variety that remains in fresh water year-round. As the *News* notes, "the former–the type harvested on the Lower Yukon–is a parasite that lives off the flesh and blood of fish.

"...Equipped with a jawless mouth shaped like a suction cup, the Arctic lamprey is able to attach itself to any of a variety of fish and then travel along with them for hours. As it does, the cutting edge of the lamprey's tongue breaks through the skin of the host, allowing it to feed off the blood and soft tissues of its prey." In other words, at sea, "eels" or arctic lampreys subsist on the blood of salmon and other fish but do not kill their host, though it may weaken the fish.

In many of the lower Yukon traditional communities, the eels are harvested as an oil-rich dog food. Some people eat eels as a delicacy. As the *News* noted, "some of the people in Grayling [a lower Yukon village] eat the eel ...but only as a delicacy. Its taste varies, according to how the eel is prepared, but it has been likened to a mix between sardines and tuna." The *News* stated that people either bake them or jar them, but as one person noted that "They're awfully rich. You can't eat very much. And they get rancid after awhile, too. You see, eels don't freeze. It has to be about 30 or 40 below before they'll get brittle enough so you can break them. They're kind of like a little tube of grease." Eel fishing is reported to have gained in popularity along with dog mushing. ("Night of the Eels, p. F-15)

Eel fishing with dip nets is a seasonal activity on the lower Yukon River. Dip nets are used to dip the eels through holes cut in the ice in November. Eel runs can be brief, sometimes passing a village in just a matter of hours. By knowing when the eels have passed villages down river, villagers can predict when the eels will show up. Holes are chopped in the ice close to the time the eels are expected to arrive. Then the people wait. When the eels are spotted in the holes, the word spreads quickly. Fishers "extend their dip nets down as far as they can in the water, scull them back and forth, then whip them out over the frozen [surface] dripping with eels. The eels are dropped on the ice and the nets move quickly back in the water for more." ("Night of the Eels, p. F-16)

How do I use a fish wheel?

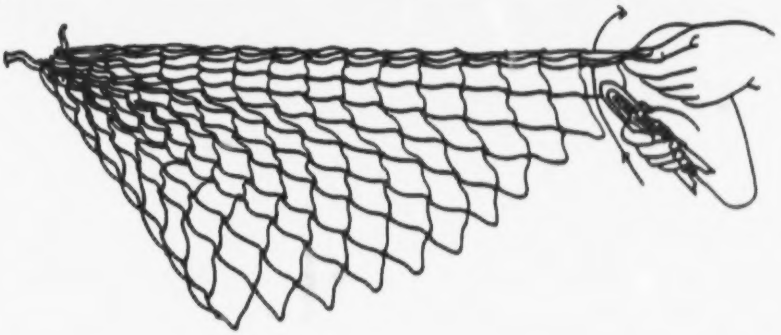
According to the same publication, "no matter how well built your fish wheel, it won't catch any fish if it isn't set in the right spot. Setting the fish wheel a few feet one way or the other can make a big difference. To choose the right location you must know the river and the habits of the migrating salmon. It may take a little experimenting from year to year to get the best spot." Use a boom log and plenty of cable to position your fish wheel at the right depth.

"After the fish wheel is set up, it is important To check it regularly to make sure it is clear of driftwood and debris. This is especially important after heavy rains when the water level is up, and driftwood is being carried along by the river.

"It is also important to check the fish storage box often. Make sure the box doesn't get too full." (Fishwheels and How to Use Them, pp. 19-20)

How do you mend nets?

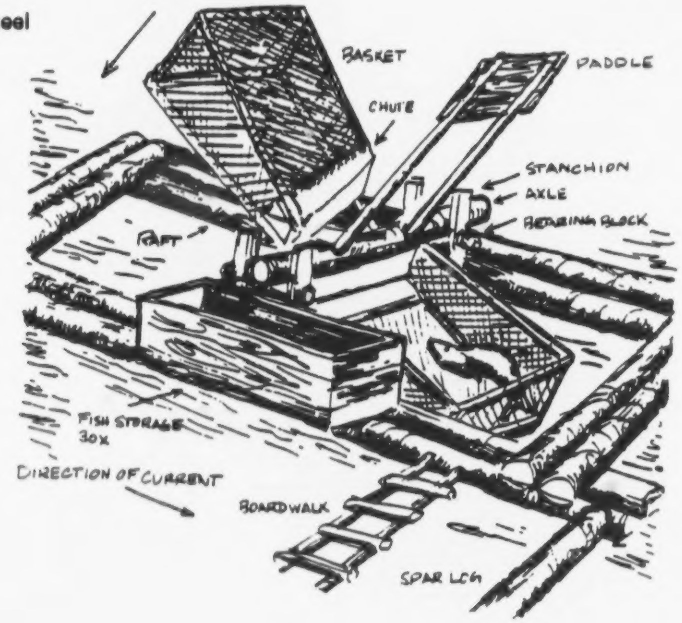
Most nets in use today are machine made of synthetic fibers, but modern nets do get damaged and have to be repaired by hand. Net mending is somewhat complicated, and you would need to learn it from another fisher. Nonetheless, publications do exist which can assist you in your net mending and which will help to keep you fishing. According to P.D. Lorimer, an Australian fishing advisor, the steps for net mending and patching include arranging the net for mending, completing the starting knot, using met making knots, right side knots, left side knots, pick-up knots, and finishing knots. Other steps include cutting out, general mending, patching, and lacing. (Net Mending and Patching, p. 1) Work with another successful fisher or consult the Pacific Sea Grant Advisory Program for details.



Are there safety tips I should remember while fishing?

Dressing for changes in the weather may mean the difference between comfort and hypothermia. Whether fishing from a boat or fishing from the shore, you can get wet. If it's a warm day, carry extra clothing–wool, pile or polypropelene–in a knapsack. Tell someone where you're going and when you're expected back. Abide by laws and regulations, and make sure, if you're on a skiff, to have adequate safety devices, especially life preservers. Something to consider in bear country is that the smell of the fish you catch may attract bears. Preparation for the unexpected is the mark of the safe fisher.

Alaskan Fishwheel



How do I care for the catch?

Gut and clean the fish as soon as you catch it. Entrails spoil rapidly, especially in warm weather. Remove all traces of the gills and all the black substance on the backbone using spoon or fish-cleaning knife is especially useful for this purpose. When the fish is clean, prop it open in the air and let it dry to a glaze, about 30 minutes. Then, place it in a waterproof container or plastic bag and keep it in the water to stay cool.

What will help me in safely operating boats?

Use good common sense. Always operate a boat at a safe speed, especially in rough water. Just as gasoline and alcohol don't mix with automobiles, they don't mix with boats either. The operator of the boat must be alert and capable. Boats need safety devices, including approved personal flotation devices (P.F.D.s) for each person aboard, signalling devices such as a strong flashlight (also required for night operation on small boats), and oars in case the engine quits. Know the waters in which you're operating the boat. Lake, bay, inlet and sea crossings (even river crossings) can be extremely hazardous. Small boats have no business out in big water.

How do I troubleshoot the outboard motor?

Some people think outboard motors are the burros of the modern age, really valuable, and really stubborn. An outboard engine needs fuel, spark and air. If an engine doesn't start, first check to see if you're out of gas. More than one person has gone halfway to disassembling the engine only to find out the gas can is empty. As engine service manuals attest, troubleshooting is divided into determining the cause of the problem, and doing something about it. A prepared boater has spare gas, a spare pull rope, spare plugs, and adequate tools for working on the engine. Problems with the engine might involve the starter rope, the electric starter, hard starting, low speed missing or rough idling, high speed missing or intermittent spark, vibration and smoking, running well, then slowing down and stopping, no acceleration, won't crank over, overheating, freezing up, generator not charging, low generator output, excessive battery charging, excessive fuel consumption, shifter dog jumps, or inoperative or slipping electric shift.

So what do I do if I fall overboard?

Do whatever you can to keep *from* falling overboard. Operate the vessel from a safe position; that usually means that you are seated. If you are traveling with someone, shout that you have fallen. Stay calm. Unless you're extremely close to the beach, keep still in the water, floating, and calling to your friend. Cling to something which floats, if available. If the boat capsizes, stay with the boat. Most boats today contain flotation, and will float even when upside down. If you can pull yourself up on the boat's hull, get as far out of the water as you can. The great hazard of falling overboard (providing you can float or swim and that you are not injured) is hypothermia, loss of body heat. You can retain your body heat when in the water if you huddle-float. In huddle floating, as you float in the water, you wrap your arms around your legs, keeping your arms at your sides, and guarding your heat loss areas. Keep your clothing on, buttoning your jackets and pulling your hood over your head. Your great heat loss areas are your head, sides, gut and crotch.

What should I know about wilderness survival?

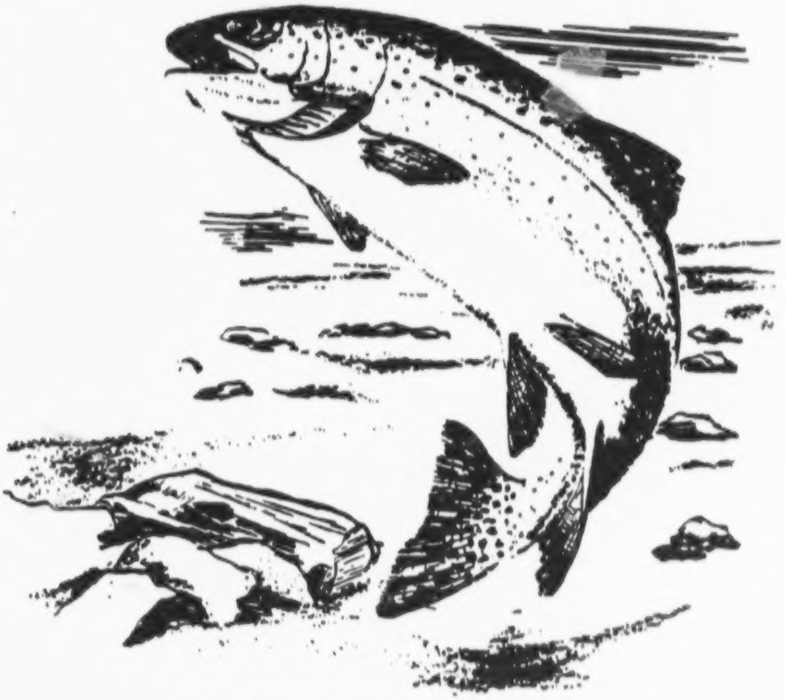
Wilderness survival while fishing can offer the same survival challenges as those for trapping or other self-sufficiency endeavors, according to the Trapping and Conservation Manual, 1987:

"Survival is the ability to cope with emergency conditions that occur when in the outdoors. Knowing how to cope with emergencies is essential . Basic survival techniques should be learned and practiced.

"Fire drills are a regular practice, even though a real fire seldom happens. But should there ever be a fire, you'll know what to do. Similarly, practicing survival techniques makes good sense. If an emergency happens while outside, you'll know what to do. You'll be able to cope with the situation if you become lost or disabled.

"A survival situation usually lasts less than 72 hours and seldom longer than five days. Searches can take time, however, and you'll need to rely on your own resources to survive until help comes.

"If you're in trouble, stay calm. Accept the fact that immediate help may not be available. Resist the urge to travel further seeking safety if you're lost. Stay put! Collect your thoughts and put survival procedures into practice." (Trapping and Conservation Manual, 1987, p. 493.



Rainbow Trout in Alaska, Courtesy of Alaska Department of Fish and Game

Self-Sufficiency Gardening

Teacher Page

Competency: **Prepare garden**

** For tasks and a full list of suggested resources see "Vegetable and Fruit Production" and "Greenhouses" sections of state model curriculum in "Renewable Natural Resources/Agriculture."*

Introduction

Although parts of Alaska are poor for gardening, Alaskans can supply a good share of their fruits and vegetables from their own gardens, even in some of the more northerly parts of the state.

Overview

A good bit has been written and published on gardening in Alaska. Though the future of production agriculture in Alaska is debatable, ornamental horticulture, floriculture, olericulture and greenhouses are viable industries in the state. A number of ornamental horticulture businesses can be found around Anchorage, for example. Anyone can supplement their diet with fruits and vegetables from the garden. Not only does the gardener benefit by saving money on food purchases, but he/she benefits nutritionally. Gardening is also a healthful outdoors hobby.

Suggested Learning Activities

See "Vegetable and Fruit Production" and "Greenhouses" sections of state model Renewable Resources/ Agriculture Curriculum. For Learning Activities, use Shann Weston's and Carla Kirts's' resource listed below.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701

Books and Pamphlets:

"Alaska Gardening Tips," Alaska Master Gardening Program, Cooperative Extension Office, A-00332.

Cold Climate Gardening and Root Cellaring in Alaska: An Instructional Guide, by Shann C. Weston and Carla A. Kirts, School of Agriculture and Land Resources Management, University of Alaska-Fairbanks, Agricultural Education Publication No. 3, December, 1986. *This publication is a must for the natural resources teacher interested in gardening. It includes lessons, suggested activities, and bibliography.*

"Gardening in Southeastern Alaska," Cooperative Extension Office, Slightly Revised, February, 1982, Publication No. 237.

"Gardens in Alaska," Cooperative Extension Office, Reprint May, 1975, Publication No. 135.

"Greenhouses in Alaska," Cooperative Extension Office, Reprint March, 1981, Publication No. 51.

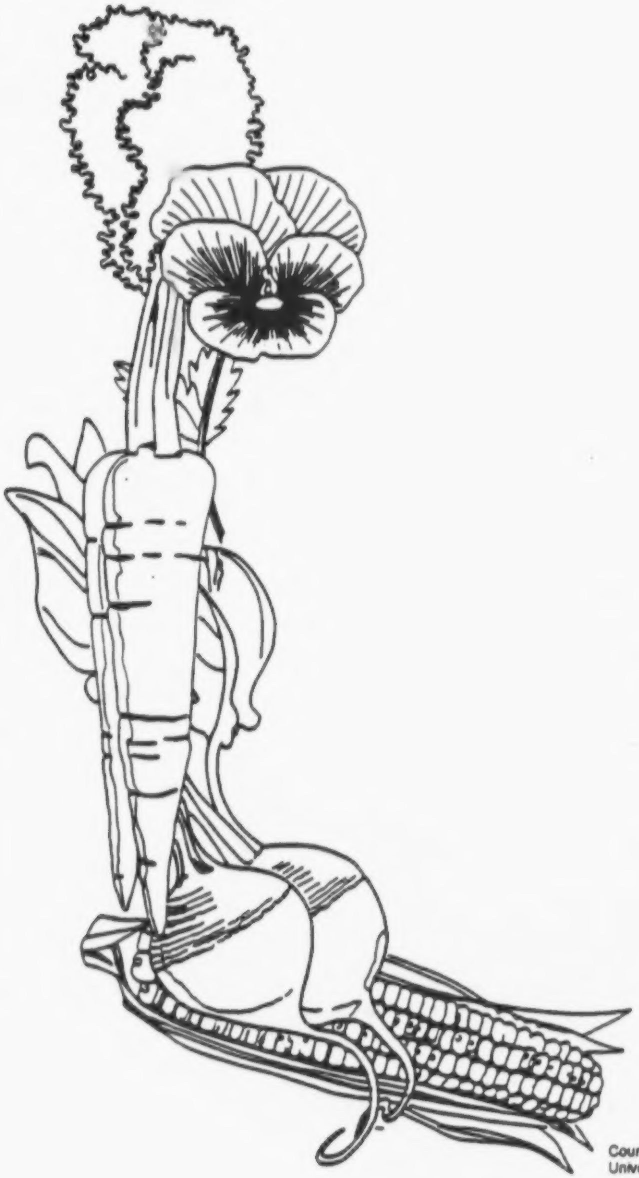
Pacific Northwest Gardener's Almanac, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

"16 Easy Steps to Gardening in Alaska," Cooperative Extension Office, June, 1977, Publication No. P-134.

Self-Sufficiency Gardening

Any tips on preparing a garden?

Probably one of the biggest surprises of those unfamiliar with Alaska is the fact you can have a very productive garden. Alaska's northerly latitude does not prevent rich gardens from being grown in the state. Gardens vary according to region in what can be successfully grown. Greenhouses and hotboxes lengthen seasons in all areas of the state. A number of resources for the aspiring Alaskan are available. A good place to start is the Cooperative Extension Office. A variety of resources are available there, in bookstores, in science classes, in continuing education classes. Of particular note is Shann C. Weston and Carla A. Kirts's Cold Climate Gardening and Root Cellaring in Alaska: An Instructional Guide.



Courtesy of School of Agriculture and Land Resource Management, University of Alaska Fairbanks

Cleaning and Preparing Meat
Teacher Page

Competency: **Clean and prepare meat**

Tasks:
Confirm that the animal is dead
Prepare carcass according to species and/or traditional methods
Bleed animal (if applicable)
Gut animal
Dispose of entrails sanitarily
Bone, quarter and/or transport game according to:
  a. size of animal
  b. location of vehicle, plane or residence
  c. products wanted (meat, hide, etc.)
Butcher meat
Wrap and freeze or dry meat
Distribute meat to family, relatives, friends or the community
Prepare and cook meat
Prepare skins, sinew and/or bone for self-sufficiency

Introduction

"Alaska's game is good food!" exclaims one Cooperative Extension Office pamphlet. As that pamphlet notes, "Usually we think of animals when we say game meat, but the term properly covers the birds as well as the more often used moose, caribou, deer and reindeer. Other Alaskan game meats are sheep, goat, beaver, rabbit, marsh hare (muskrat), whale, seal, walrus and oogruk. All these are good food. In fact it is very true that there is good nutrition in any cut of meat." ("Alaska's Game is Good Food," p. 1) Wild meats form a part of the Alaskan diet in all parts of the state.

Overview

The job of self-sufficient hunter is one which has always had great importance to Alaskan families. Wild game may be the primary food for the family or it may act as a supplement to store-bought foods, hunting, preparing and serving wild game provides millions of pounds of foodstuffs–and millions of dollars' worth of high protein, low calorie foods for Alaskans throughout the state. Though availability of wild game shifts with the cycles and fluctuations of game populations, wild game will remain a healthy contributor to the Alaskan diet. In addition to the subsistence or self-sufficient job of hunter, harvesting and preparing wild game offers peripheral employment from the Alaska Department of Fish and Game regulators to those who sell ammunition, knives, and sundries related to food preservation. A knowledge of methods of cleaning and preparing wild game contributes to employment in these segments of the cash economy as well.

Suggested Learning Activities

1. Invite a hunter to class to demonstrate the cleaning and preparing of game meat, including (if possible): bleeding and gutting the animal, boning, quartering, and butchering the meat; wrapping and freezing or drying the meat. If possible, prepare and cook some of the meat for a class meal.
2. In the field, after hunting and killing an animal, be sure that it is dead, then prepare the carcass. Bleed and gut the animal; dispose of its entrails; then bone, quarter, and transport it. At home, butcher, wrap, and freeze or dry the meat. Distribute it to friends, relatives, etc. as you see fit. Prepare and cook some of the meat.
3. Invite local elders or craftspeople to class to demonstrate the use of animal skins, sinew, and bone for tools, crafts, and other items.

4. Use the skin, sinew, and bone from your kill to make traditional tools, crafts, and other items.
5. Draw a neatly-labelled color poster illustrating the process of preparing a kill for storage, including bleeding and gutting the animal, and boning, quartering, and butchering it.
6. Write a step-by-step description of how to go about preparing the kill for storage - OR - write a personal account of your experience.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701

Books and Pamphlets:

"Alaska's Game is Good Food!" Cooperative Extension Service, Publication 126, Revised July 1974.

Dressing & Cooking Wild Game. The Hunting & Fishing Library, Prentice Hall Press, 1987. *Publisher's address: Cy DeCosse Incorporated, 5900 Green Oak Drive, Minnetonka, MN 55343.*

Home Butchering and Meat Preservation. Geeta and Sam Dardick, Tab Books, Inc., Blue Ridge Summit, PA 17214, 1986. *A comprehensive text.*

"You and Your Wild Game," Agricultural Extension Office, University of Wyoming, Laramie, WY 82071. *Available through Alaska Cooperative Extension offices.*

NAHC Wild Game Cookbook," North American Hunting Club, Dept. NAZ-NAFG, Box 35557, Minneapolis, MN 55435.

Ziploc, booklets: *"Put the Lock on Freezing Meats & Poultry, Fresh Fruit, Fresh Vegetables and Baked Goods" ($1.00)* P.O. Box 4699GH, Monticello, MN 55365

Cleaning and Preparing Meat

How do I make sure the animal is dead?

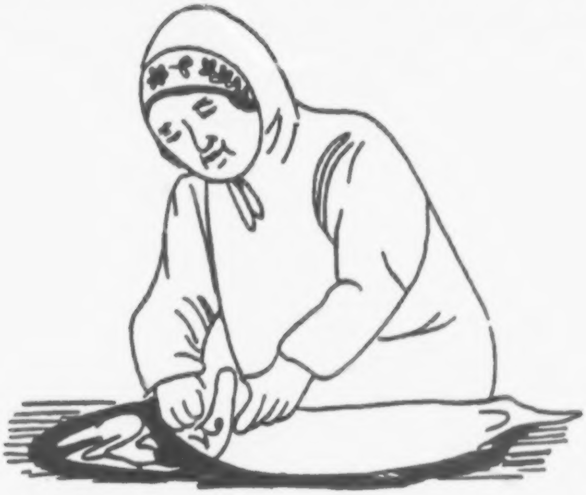
You must take special care when approaching an animal you believe is dead. Even though you just shot the animal, and even though the animal may be still, a huge moose or caribou may spring up with a burst of life and stamp you to death. Hunters have been hurt by not taking care. After shooting the animal, approach it slowly, rifle ready, from the back, and nudge the animal's hind quarters with your foot to make sure it is dead. Make doubly sure before preparing the animal to be cut up. If the animal is still alive, a finishing shot to the head or neck will assure you of death. When you are sure the animal is dead, place your gun safely out of the way, safety on.

How should I prepare the carcass?

The hunter should be careful about where the animal is shot, so to make preparing the carcass easier. As Dolores Larson states, "the best location for a quick and clean kill is a broadside heart-lung shot, low, and just behind the front shoulder." If you must shuttle the meat out of the location in several trips, be careful when returning to the kill site; a bear may be on the kill.

As Ms. Larson continues, "when dragging smaller animals such as deer, or caribou toboggan-style over snow, always pull the head first. The carcass slides easier this way, and it minimizes damage to the skin. for cutting up game animals in the field, a small emery stone and a steel are nearly as important as a knife.

You'll need a good sharp knife to prepare the carcass. A stainless steel knife works best, a good hard one, though soft enough for resharpening at home. A good hunter knows how to sharpen a knife and keep it sharp. A small sharp meat saw is also desirable for dressing big game. Other essential items include: clean wiping cloths; bags for the liver, heart, and tongue; string and rope; cheese cloth or butcher's stockinette; clean canvas covers if you are packing out; a block and tackle for large animals; salt (salt required to cure skins is approximately 1 lb. salt to 4 lbs. skin); black pepper (to discourage flies during some seasons). ("Caring for Game Meat," p. 16)



Any tips on bleeding the animal?

Rubber gloves may protect you from any blood-borne parasites the animal may have. As Dolores Larson notes, "If the animal has been shot in the lungs, the most desirable location, it probably will not need to be bled. If it has been shot in the head, begin by draining blood toward the head, and then cut the throat as deep as possible immediately behind the lower jaw. Insert the knife, sharp edge up, at the point of the brisket and cut diagonally, severing the large blood vessels in the neck." ("Caring for Game Meat," p. 16)

How do I gut the animal?

As Dolores Larson continues, "With a sharp, clean knife, held cutting edge up, open the skin of the carcass from the crotch to the chin directly along the median line. Eviscerate [take the guts out] by carefully pulling and cutting skin away exposing the intestines. Take care not to avoid touching the scent lands located on the hind legs. These glands are identified easily by the long tufts of hair surrounding their openings.

"With your knife, carefully cut down to the pelvic bone where the hind legs meet. Next use your saw and cut the pelvic bone between the base of the tail and the exposed intestines. Note that some regulations require that the sex organs remain attached to the unskinned carcass. This cut will expose the intestines and make it easier to keep the animal on its back. Protect the intestines as you cut. If you should accidentally cut the intestines, use string to tie off the cut so the contents will not leak out." ("Caring for Game Meat," p. 16)

How do I dispose of entrails sanitarily?

If you are near the sea, the entrails may be disposed of in the sea. Otherwise, dispose of them on an open area away from people. You may burn them if you have a burn barrel, or, bury them, again away from people.

How do I butcher the meat?

As Larson continues, "carefully cut or saw the (brisket bone connecting ribs at the breast) all the way to the neck, allowing the chest cavity to be opened. On large animals the brisket should be removed by cutting the ribs where they connect to the brisket. This will allow easier access to lungs, heart, and diaphragm.

"Cut the windpipe and the esophagus (gullet) at the base of the lower jaw. When cutting the windpipe at the jaw, cut away from the neck, pulling it toward the opening in the brisket. On large animals, it is helpful to attach a rope to the windpipe and have someone pull it taut while you cut away the tissue that connects The lungs and heart to the carcass.

How about preparing skins, sinew and/or bone for self-sufficient uses?

As Larson says, "skin the carcass by slitting up the inside of each leg to the knee, starting from the gutting slit. Cut off the leg at the knee joint. By pulling and cutting skin connecting tissue, the hide can be removed quickly. Allow the hide to lay out flat, hair down; this will keep the meat clean when quartering. " ("Caring for Game Meat," p. 17)

What will help me in boning, quartering and/or transporting game?

Transporting the carcass is much easier if it is quartered. As Larson says, "remove the head by cutting where it connects to the spine. Find the first rib at the middle of the animal (the short, floating rib), then count down and cut between the second and third rib from the backbone up through the top of the flank. Repeat on the other side, then saw through the backbone, halving the animal. Grab the front legs, then pull the front half up in a sitting position on the ribs, and saw down the center of the backbone. This completes front quartering.

"Pull up the hind half into a sitting position on the rump and saw down the center of backbone. This completes all four quarters. If you need to reduce weight further, count up seven ribs on the front quarters, and cut between the ribs and through the backbone. Cut off the front legs and repeat on the other front quarter. On the hind quarters, cut off the leg close to the hip bone and at a right angle to the backbone. Repeat on the other hind quarter. Cut off lower leg. Repeat on other rear leg." ("Caring for Game Meat," p. 28)

How should I wrap, freeze or dry meat?

See the section of these instructional materials which deals with food freezing and drying. In general, for freezing, meat is prepared, wrapped, and frozen, protected from the air. The date frozen should be written on the package. For dried meat, use dehydrators, smokers, or sun.

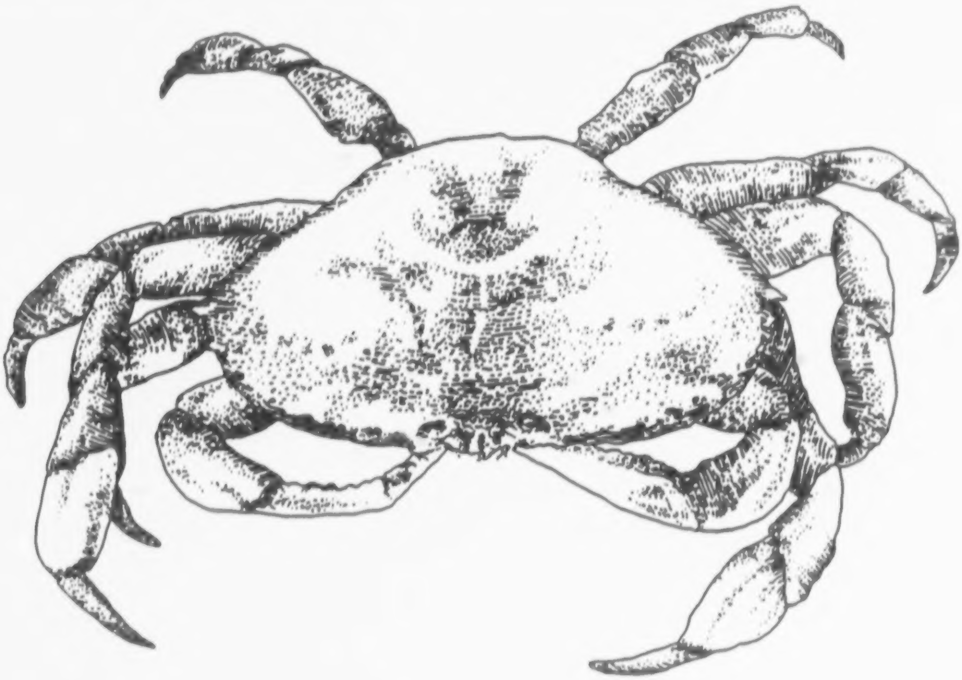
What do I do with the meat?

In many rural communities, when someone harvests big game, it is shared with family, relatives, friends or others in the community. For Alaska Natives in rural communities, such distribution systems have gone on for thousands of years. Sports or subsistence killed game cannot be sold.

As noted in Alaska Game Regulations, you may not purchase, sell or barter big game or small game except for hare or rabbits. Some caribou bartering can take place in certain units, but you may not sell, purchase or barter part of any bear; or an unsealed beaver, land otter, lynx, wolf, wolverine, or marten from certain units or the skull, horn or antler of an Alaskan big game animal including any prepared big game trophies [naturally shed antlers may be sold]. Taxidermists may buy and sell a skin or trophy under permit; a person may purchase a skin or trophy from the state; or a person who engages in fur dealing may buy, barter or sell such skins. See "Alaska Game Regulations" for details.

How do I prepare and cook the meat?

A number of good cookbooks for wild game are available either at bookstores or at the Cooperative Extension office. As noted in "Alaska's Game is Good Food!" herbs, spices onions and garlic are important in the preparation of wild game. Consult this document for lists of some excellent game cookbooks.



Cleaning and Preparing Plants
Teacher Page

Competency: **Clean and prepare plants**

Tasks:
Compare traditional versus contemporary means of wild plant preparation
Prepare plant items in the field
Prepare items at home
Gather and prepare seaweed
Choose recipe

Introduction

Purchasing fruits and vegetables in the cash economy has found its way to the most remote Alaskan locations. Fruits and vegetables imported from Outside, canned, doused with chemicals, and ripened by gasses, in many cases can hardly compare in nutritive value to the plants found right outside our own back doors. Using these nutritional plants in many cases is just a matter of re-acquainting with the resource, knowing some basic methods of preparation, and following a recipe. The books listed below, and others, are a good place to start.

Overview

Self-sufficient gatherers can add considerable foodstuffs to the Alaskan table. The Alaska Department of Fish and Game notes that wild celery, spinach, mossberries, salmonberries, cranberries, blueberries, seaweed, crowberry, potatoes and other wild foods are gathered in a variety of locations. These wild fruits and vegetables are among the most under-utilized of Alaskan natural resources.

Suggested Learning Activities

1. Invite a Native elder or other expert to class to discuss the difference between traditional and contemporary means of wild plant preparation.
2. Take a field trip to gather plants or seaweed for medicine or food. Harvest them carefully, following procedures on p. 56 and prepare them back at class or home for drying, canning, or freezing.
3. For other activities, refer to the section on cleaning and preparing medicinal plants.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701

Books and Pamphlets:

Alaska's Wilderness Medicines, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

The Alaska-Yukon Wild Flowers Guide, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

"Collecting and Using Alaska Wild Berries and Other Wild Products," Cooperative Extension Service, P-120, Reprinted July, 1981.

Flora of Alaska and Neighboring Territories, Eric Hulten, Stanford University, 1974.

Handbook of Wild Edible Plants, Euell Gibbons and Gordon Tucker, Donning Company, Virginia Beach, 1980.

Medicinal Plants of Alaska, by Teri Viereck, Tanana Valley College Division of General Education, 1982

"Nauriat Niginaqtuat–Plants That We Eat," by Anora Jones, Traditional Nutritional Project, Maniilaq Association, 1983. *Maniilaq Assoc., P.O. Box 256, Kotzebue, AK 99752. (907) 442-3311.*

Plant Lore of an Alaskan Island, Frances Kelso Graham, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

Root, Stem and Leaf: Wild Vegetables of Southeast Alaska, by Glen Ray, South East Regional Resource Center, 210 Ferry Way, Juneau, AK 99801. *Soon to be reprinted.*

"Subsistence in Alaska: Arctic, Interior, Southcentral, Southwest, and Western Regional Summaries," by Schroeder, Andersen, Bosworth, Morris, and Wright, Alaska Department of Fish & Game, Division of Subsistence, Technical Paper No. 150.

Vegetables from the Sea, To Help You Look and Feel Better, by Seibin & Teruko Arasaki, Japan Publications Inc., Tokyo, 1983. *A complete guide to seaweed nutrition and cooking.*

Wild Edible and Poisonous Plants of Alaska, Cooperative Extension Service, University of Alaska, 1976.

Slide Show and Video:

"Let's Eat," 20 minute VHS video, 1985. *Available through the Alaska State Film Library or from KYUK Video Productions, Pouch 468, Bethel, AK 99559 (907) 543-3131. Three-part series examining the effect of Western foods on the health of Native Alaskans in the southwest portion of the state. Length: 12-15 minutes each*

"Wild Edible Plants of the YK Delta," by Mary Gregory, available from Alaska Area Native Health Service, Health Education Office, P.O. Box 107741, Anchorage, AK 99510-7741. (907) 279-6661. *Mary Gregory is also available for classroom teaching and nature walks in the Bethel area. Contact her at YK Health Corporation.*

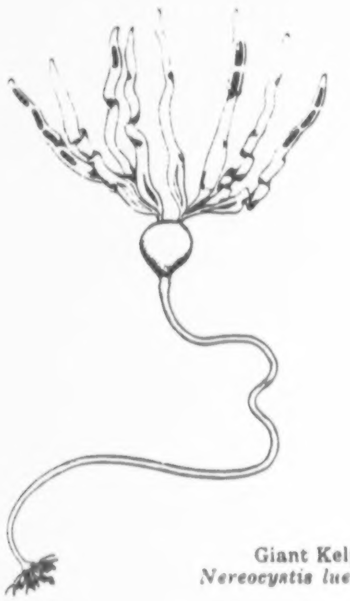
Cleaning and Preparing Plants

How do traditional means compare with contemporary means of wild plant preparation?

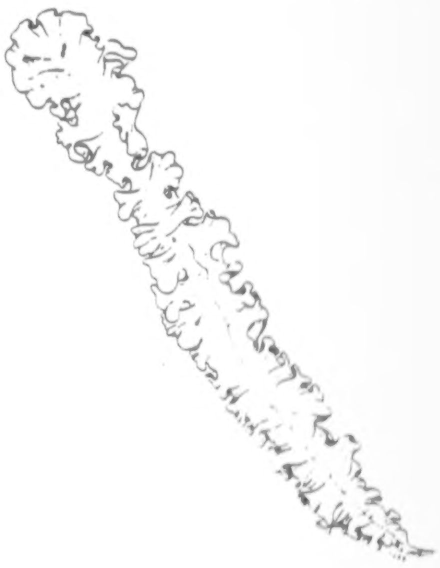
Traditional uses of wild plants were different from today's purposes. Historically, wild plants might have been collected as medicine for sickness. Today, wild medicinals might be a supplement to more modern medicines. For foodstuffs, though wild plants form an important part of the Alaskan diet, they are usually viewed as supplemental–peoples' lives don't depend on them.

How can I prepare plant items in the field?

First of all, make sure you have collected the right plant. Some plants are poisonous. You must be sure. An authoritative plant guide (or two) as well as the advice of some knowledgeable person will help you to be sure.



Giant Kelp
Nereocystis luetkeana



Seaweed
Porphyra laciniata

Once you know exactly what you're gathering, Teri Viereck notes that you need to "select leaves which are not decayed or discolored and gather them when they are dry. Take care not to disturb the area, avoid leaving trash and litter behind, and do not take all of the plant, but only harvest a portion of what there is." (Medicinal Plants of Alaska) How plants are prepared in the field might depend on how far you need to transport them, the weather, and the means of transportation. In general, plastic bags are not adequate for collection, as they do not breathe. Use a pail or a hard plastic container with a lid or similar container for plant collection.

As Frances Graham notes, "wild food foragers should keep in mind that fresh edibles of any kind begin to lose their nutritional value as soon as they are harvested. Therefore, eat wild foods as soon as possible after they are gathered to gain the fullest nutritional benefit they can provide." (Plant Lore of an Alaskan Island, p. 6)

How do I prepare items at home?

The question might pertain to your means of preservation and the use of the plant. Berries can be canned, frozen, or prepared right after harvest. For drying and storing of leaves, Teri Viereck says, "lay the leaves on a rack or screen or hang them in small bunches from pegs or strings in an airy place that is as warm and dry as possible, but not in the direct sunlight. If your climate is hopelessly damp and humid or the plants too succulent, you may need to use a warm oven to hasten the drying. After the leaves are brittle, they should be stored in airtight glass or tin containers in a dark, dry place that is cool. Don't crumble the leaves into pieces any smaller than necessary." (Medicinal Plants of Alaska)

For vegetables, fruits and berries, follow procedures outlined in some of the publications above.

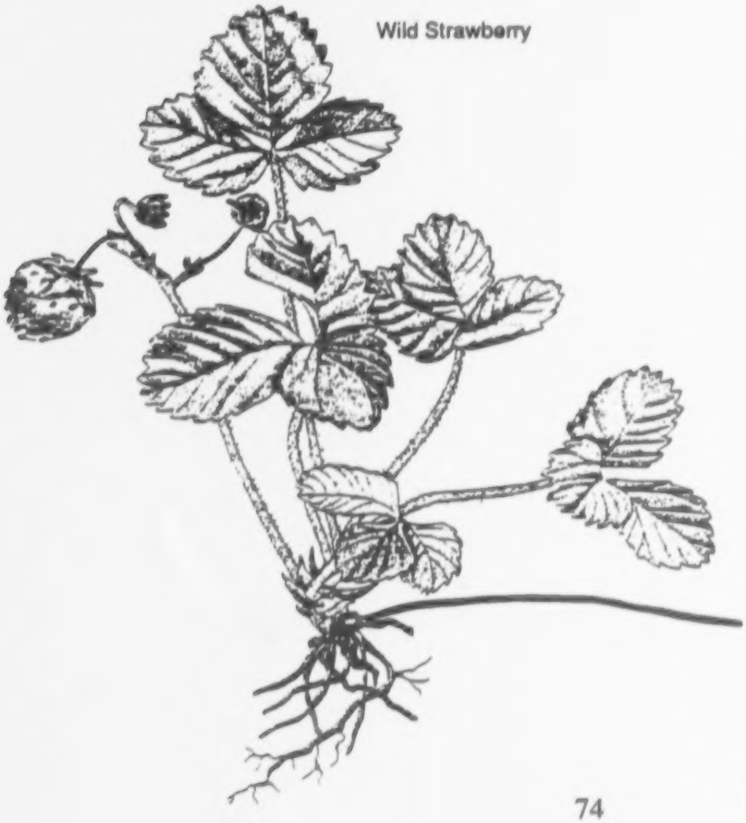
How should I gather and prepare seaweed?

See the seafood and shellfish area above. In general, seaweeds are washed and then dried. The Arasakis note that the following general process for harvesting and preparing seaweeds:

1. Wash them immediately in freshwater to desalt them.
2. Dry them fast in the shade.
3. Store them in dark, dry places. (Vegetables from the Sea, p. 88)

How do I choose a good recipe?

Choosing a good recipe might involve a trip to the library, bookstore, or asking for and sharing with others. Ask around. Happily, a number of Alaskans have shared their seafood and seaweed recipes. The Cooperative Extension office is a good place to start to find a good recipe.



Wild Strawberry

76

Smoking Fish
Teacher Page

Competency: **Smoke fish**

Tasks:
Cut and dry wood for smoker
Prepare meat or fish for smoking
Apply techniques for smoking
Store smoked foods

Introduction

Alaska smoked salmon, long a favorite of Alaskans, is becoming increasingly popular for visitors to the state. People who follow a self-sufficient lifestyle appreciate the preserving qualities of smoking, though it is actually the salt which preserves the foods, not the smoke.

Overview

Smoking, the traditional method of preserving foods, is popular throughout the state. Smoking enhances the flavor of many foods. Stringent food service laws involve special procedures and requirements to prepare foods for sale. These laws especially pertain to prepared foods (which potentially could contain botulism) such as smoked fish.

Suggested Learning Activities

1. As a class or small group project: locate someone from the community who is willing to help you build a smokehouse. Collect or buy necessary materials and put it all together.
2. Visit a local commercial smokery to observe the process of smoking and drying foods. What precautions do the people involved in this industry take to satisfy health requirements? Write about your observations.
3. Invite someone who is experienced at home-smoking fish to class to discuss his/her procedures. Then accompany him/her to the smoker to observe the process in action. Pay special attention to how your expert heats the fish enough to kill disease-causing bacteria and parasites.
4. Smoke some fish, using the procedures you observed above and the tips on page 59.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701. *The Cooperative Extension pamphlet "Smoking Fish at Home–Safely" PNW 238, June, 1983 is an excellent publication. Another essential one-page pamphlet is "Canning Smoked Salmon," A-00127.*

Restaurant/Public Facilities Inspection/Permits, Department of Environmental Conservation, P.O. Box O, Juneau, AK 99811 *This department is responsible for inspecting and licensing food service establishments for those interested in selling smoked fish.*

Books:

Bookstores and sporting goods stores throughout the state offer a variety of cookbooks and "how tos" on smoke cookery. Smoking is an inexpensive and tasty way to preserve foods. But care must be taken to remain safe!

"Smoking Fish at Home–Safely" PNW 238, June, 1983 , Cooperative Extension Service.

"Canning Smoked Salmon," A-00127, Cooperative Extension Service

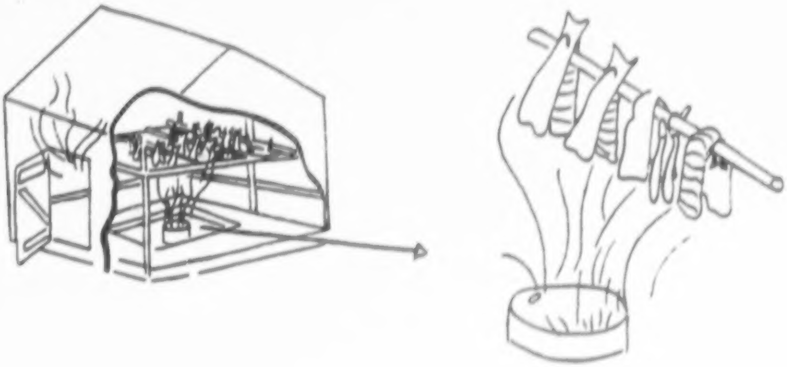
How to Split, Dry and Smoke Salmon, by Anecia Breiby, Adult Literacy Laboratory, University of Alaska, Anchorage, 1982. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

Smoking Foods

How do I build a smokehouse?

Many Alaskans skip the construction phase altogether and just buy a small electric smoker, available for $30 - $60 at hardware stores.

If you're interested in building a smokehouse, however, you'll need a small enclosure (such as a shed, old refrigerator, or outhouse-sized structure). Attached to or inside of the enclosure, place some kind of smoking unit such as a small drum stove, and several racks or grills that can slide in and out at different levels above the smoking unit. Consult with someone who has experience in this area for specific help.



How do I cut and dry wood for the smoker?

Many who smoke fish use alder. Alder is a hard wood that is commonly found throughout Alaska. Commercial butcher shops may buy hickory or mesquite chips.

How do I prepare meat or fish for smoking?

As the Cooperative Extension notes, you must start out with quality fish. Smoking will not improve the quality of the fish nor effectively mask the flavor of poor-quality fish. Clean your fish thoroughly to remove all slime, scales and blood. If the fish has been frozen, thaw thoroughly before starting.

Typically, to prepare the fish, remove the backbone and split the fish. Some other fish (also salmon) are filleted for smoking. Some people pull out ribs with pliers or tweezers.

When you have prepared the fish, salting is the next step. This is the most important step. As the Cooperative Extension notes, "fish smoked without proper salting and cooking can cause food poisoning–it can even be lethal." ("Smoking Fish at Home–Safely, p. 1). You must be careful. Follow the procedures outlined in the pamphlet, in other reputable publications, or that you have learned from a reliable source. Commercially smoked fish must attain a "WPS" or "Water Phase Salt" content of 3 1/2% of the moisture left after smoking. As the pamphlet notes, those smoking fish at home cannot properly test to know whether the salt content is adequate for safety. That is the reason that "proper cooking and refrigerated storage are essential for absolute safety."

The fish may be salted in brine as the Cooperative Extension suggests (brine is a salt solution), or may be placed in salt and salt layered over the fish and left for 24 hours as some other recipes may require. Soy sauce and brown sugar are delicious additions to a salt brine. (Again, stick to books or recipes that you know are reliable!) After salting according to your recipe, you will rinse the fish and air dry it thoroughly, and then it will be smoked.

What are some good techniques for smoking?

Many Alaskans have a favorite technique for smoking. Observing and helping someone who is smoking fish is a good way to learn some tips.

The Cooperative Extension Service suggests that fish be cooked at 180° (82 ° C) internal temperature for at least 30 minutes some time while smoking. This step is essential, they note, as only through proper cooking and refrigeration can you be sure that the fish will be safe from botulism. To get the fish this hot, your smokehouse will have to be able to attain temperatures of 200° F to 225° F. If your smokehouse cannot attain those temperatures, you will have to cook the fish in your oven after smoking. Use a standard meat thermometer for checking. ("Smoking Fish at Home–Safely, p. 2)

How do I store smoked foods ?

As the Cooperative Extension notes, you must "refrigerate your smoked fish (below 38° F, 3° C) if you do not plan to consume it immediately. *This is essential:* The salt content is unknown and there may be doubt about the time and temperature achieved in the smoking cycle."

For short-term storage, you can keep your smoked fish in paper towels. For longer storage, you can tightly wrap the smoked fish and freeze it. Smoked salmon and other smoked foods can be carefully canned. Follow Cooperative Extension directions precisely. (A-00127, Reprinted October, 1986).

Canning Foods
Teacher Page

Competency: **Can foods**

Tasks:
Prepare foodstuff to be canned
Can plants/roots/berries, including:
- a. obtaining canning jars
- b. preparing pressure cooker
- c. cooking product
- d. placing product in sterilized jars
- e. cooling jars
- f. sealing jars
- g. storing jars

Introduction

Canning is a traditional method of preserving foods, practiced throughout the state. Many berries are canned, as are smoked foods such as salmon or even bear. Canning, like smoking, carries hazards. The possibility of botulism, which may be fatal, is the chief hazard in home canning. Canning concentrates the labor of preservation on a few days, and is a good way to boost self-sufficiency.

Overview

Some canned foods are sold, although a number of criteria must be met in order to meet state statutes regarding food service. Write or call your local Department of Environmental Conservation inspector for information.

Suggested Learning Activities

1. Invite to class a local person who is willing to demonstrate the process of canning, including preparing the food and jars, cooking the product, using a pressure cooker, if necessary, placing it in sterilized jars, and cooling, sealing, and storing the canned product.
2. Follow procedures outlined in this chapter can and store fruit, vegetables, fish, or meat. Sample the canned product!
3. Write a step-by-step description of procedures you used in the canning of your food OR write a personal account of your experience.
4. Prepare a photo-essay explaining the canning process. Label photographs neatly so that someone who is interested in canning is able to follow your procedure easily.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701. *The Extension Service carries several publications on home canning.*

Restaurant/Public Facilities Inspection/Permits, Department of Environmental Conservation, P.O. Box O, Juneau, AK 99811 *This department is responsible for inspecting and licensing food service establishments for those interested in selling smoked fish.*

Bookstores and sporting goods stores throughout the state offer a variety of cookbooks and "how tos" on smoke cookery. Smoking is an inexpensive and tasty way to preserve foods, but do it with care to remain safe!

Books and Pamphlets:

"Home Canning-Fruits, Vegetables, and Meats," Wolf and Zottola, Extension Bulletin 413, Revised 1980. *Available through Cooperative Extension Office.*

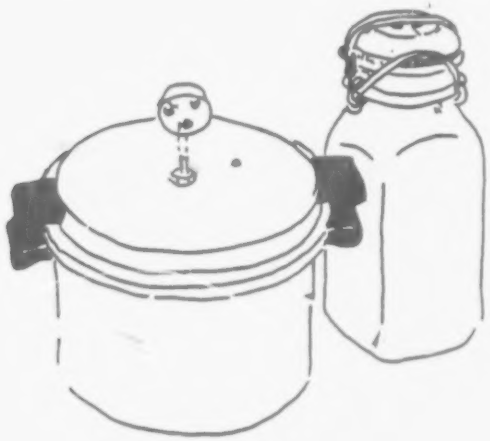
The Guide to Self-Sufficiency, John Seymour, Hearst Books, New York, 1976. *A good general text generally aimed at back-to-land lifestyles, and oriented more to the Lower 48 than to Alaska.*

Canning Foods

How do I use a pressure cooker for processing meat or other foods?

Some people use a pressure cooker for processing foods. According to the U.S. Department of Agriculture, you should "follow the manufacturer's directions carefully. Here are a few suggestions about using a pressure canner:

1. Put 2 or 3 inches of water in the canner; heat to boiling. Use enough water to prevent the canner from boiling dry.
2. Set packed jars or cans on a rack in the canner. Allow space for steam to flow around each container. If there are two layers of cans or jars, stagger the top layer. Use a rack between layers of jars.
3. Fasten canner cover securely so that all steam escapes through the petcock or weighted-gage opening.
4. Let the steam pour steadily from the vent for ten minutes to drive all air from the canner. Then close petcock or put on weighted gage.
5. Let pressure rise to 10 pounds (240 degrees F.) The moment this pressure is reached, start to count processing time. Regulate heat under the canner to maintain even pressure. Do not lower pressure by opening petcock. Keep drafts from blowing on canner. Fluctuating pressure during processing causes liquid to be drawn out of glass jars.
6. Watch processing time carefully. When time is up, remove canner from heat immediately.



7. If meat is packed in jars, let canner stand until pressure drops to zero. Do not pour cold water over canner. When pressure is reduced suddenly, jars lose liquid. After pressure registers zero, wait a minute or two. Then slowly open petcock or take off weighted gage. Unfasten cover and tilt the far side up so steam escapes away from you. Take jars from the canner.
8. If meat is packed in cans, remove canner from heat as soon as processing time is up. Open petcock or take off weighted gage at once to release steam. Then unfasten cover, tilting far side up so steam escapes away from your face. Remove cans."

("Home Canning of Meat and Poultry", Home and Garden Bulletin No. 106, United States Department of Agriculture, Washington, D.C. 1975. p. 11)

What are some sanitary procedures to follow while canning?

Today commercial vacuum packing devices are available to the consumer, but though vacuum packaging reduces freezer burn and the bags are reusable, the University of Alaska Cooperative Extension Service notes that improper use of these devices can kill. Alaska has the highest botulism rate in the nation. Victims of this toxic disease have been mostly villagers who try to prepare traditional foods using modern devices such as plastic bags.

"Vacuum-sealed bags are the perfect environment for botulism. Botulism spores are present in air, water and soil and, under normal circumstances, are dormant and harmless. Catch them in an air-tight container, however, and they are transformed into deadly bacteria."

Canning involves cooking the product, killing bacteria by heat, and then keeping bacteria from reentering the product by sealing it in a container. The home canner uses jars, the commercial canner, cans.

"Fruit cans well, as it is generally high in acid. Vegetables are low in acid, so they do not can as well. Many Alaskans can berries. ("Home Canning-Fruits, Vegetables and Meats," p. 6)

How do I prepare the foods to be canned?

First of all the fruit is prepared (note that fish or meat is canned differently–refer to Cooperative Extension bulletin A-00127, other reputable publications or reliable locals for exact methods, see "Smoking Foods" above) by "gathering the products early, when they are at their peak of quality. Gather or purchase only as much as you can handle within 2 or 3 hours. Wash the product carefully. The cleaner the raw foods, the more effective the canning process. Do not can decayed or damaged food items. ...Prepare foods as you would for the table. Keep them cold until you are ready to begin the actual canning. Scald the washed jars and keep them hot. This may be done in a dishwasher. It is not necessary to sterilize jars that are to be processed in a boiling water bath of pressure canner. They will be sterilized during the processing." ("Home Canning-Fruits, Vegetables, and Meats," p. 6.)

How do I can plants, roots and berries?

Though the techniques of cooking vary for different foodstuffs, the techniques of packing and sealing the jars is the same no matter what the material canned. Several publications from Cooperative Extension Office or "how-to" publications from commercial bookstores cover this topic.

Drying Foods
Teacher Page

Competency: **Dry foods**

Tasks:
Air-dry fish
Dry fruits and/or vegetables
Use dehydrator
Store dried foods

Introduction

All five species of Alaska salmon are dried, often to prepare them for smoking. In the Interior and in the northern portions of the state they may be dried outside. In Southeast fish may be dried inside, in a dehydrator, or dried as they smoke. A variety of other foods are dried to preserve them. Drying has the advantage of storage without having to purchase expensive freezers or jars and canning supplies. Without safe cooking of foods, drying can, for some foods, be hazardous. Follow instructions from Cooperative Extension or from reliable local people.

Overview

Drying foods for personal use is an effective method of preservation, but to dry foods for sale is a different matter indeed. Food preparation falls under the jurisdiction of the Department of Environmental Conservation and is subject to stringent regulation and inspection. Contact the local DEC inspector for information. Smokeries, small canning businesses (for specialty foods such as kelp pickles etc.) are showing up throughout the state, so one should not be discouraged in starting a business. But neither should someone take a risk by selling food without legal licensing.

Suggested Learning Activities

1. Prepare fish for air-drying by gutting, cleaning, filleting, and slitting the fish.
2. Design and build a small dehydrator with a light bulb for a heat source and a small fan to provide circulation. Install several rack-holders and build racks to fit.
3. In preparation for drying: pre-treat fruits with antioxident solution or honey water dip. Blanch vegetables. Then dry your foods using the sun or a dehydrator. After foods are completely dry, store them in air-tight, moisture-proof, insect-proof containers.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701

Books and Pamphlets:

Freezing & Drying, Ortho Books, Chevron Chemical Company, 1984. Ortho Books, Chevron Chemical Company, 575 Market Street, San Francisco, CA 94105. *An excellent general text.*

"How to Build a Portable Electric Food Dehydrator," by Dale E. Kirk, Agricultural Engineer, Circular 855, Oregon State University, Corvallis, OR 97331.

How to Split, Dry and Smoke Salmon, by Anecia Breiby, Adult Literacy Laboratory, University of Alaska, Anchorage, 1982. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

"Solar Dehydrator," American Plywood Association, Box 11700, Tacoma, WA 98411. *Plans for building a solar dehydrator. Send $2.00.*

Drying Foods

How do I air-dry fish?

As a subsistence user in Barrow relates: "Cut the head off. Slit open the fish from the back lengthwise. Keep cutting till you get to the backbone, then carefully along the ribs. Turn the fish over and repeat what you did on the other side. Break off the bone near the tail fin and now you have the backbone out, along with the guts.

"Cut along the front section. Then on the meat only (not the skin) cut crosswise in about one-inch intervals. Place in a bucket of brine, adding enough rock salt so that some salt sinks to the bottom and doesn't dissolve. Place a small potato in the brine and when it barely floats, your brine is ready for use. Soak the fish in the brine for 10 minutes or longer. Then hang to dry outside on a rack by the tail fins. Meat is slit crosswise on white fish; salmon is cut lengthwise." Fish are hung outside until they develop a sheen, at least 2-3 days before turning to dry the other side. If the weather has been conducive to drying, the fish should be dry in a week and a half. When dry, the fish may be removed to the smokehouse.

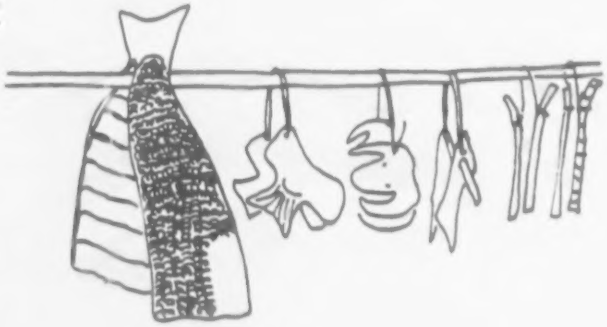
How do I dry fruits and/or vegetables?

Fruits and vegetables can also be sun dried, or they may be dried in a dehydrator. Fruits and vegetables should be pre-treated before drying. As Ortho Books notes, "fruits that darken when cut and exposed to air should be pre-treated with an antioxidant solution or a honey-water dip before dehydrator or oven-drying. If you sun-dry fruits, sulfur those that darken or dip then in an antioxidant or a honey-water solution. ...Most vegetables should be pre-treated by blanching before drying." (Freezing & Drying, p. 66)

Fruits and vegetables are usually dried on trays. Oven racks, or screening stretched over a frame may act as trays. You can also cover a frame with cheese cloth or other permeable material.

Is it worth it to use dehydrators?

Dehydrators can be constructed cheaply, and by using one, you'll have absolute control of the drying environment. Dehydrators contain electric heating elements that draw moisture from the food and a fan that blows warm air across the food to absorb released moisture and carry it away. Small dehydrators are available today for home drying of meats, vegetables and fruits. Such small drying machines have value to the backpacker or hunter who wishes to prepare some foods for a trip, but they are generally small for the self-sufficient user. Besides, it requires energy to run the dehydrator.



How do I store dried foods?

Dried foods must be tested for dryness before storing. Pockets of moisture can allow spoilage. Store dried foods in air-tight, moisture-proof insect-proof containers in a cool, dry place. Glass jars, including recycled mayonnaise, pickle or other jars work well, as do shortening cans, if the foods are first placed in sealed plastic bags. Store foods in small batches so they don't add moisture to each other.

Constructing an Ice Cellar
Teacher Page

Competency:	**Construct ice cellar**
Tasks:	Locate site for ice cellar Dig Cellar, steaming permafrost as needed Scatter dirt Reinforce cellar walls

Introduction

A Barrow resident related: "When the animals were abundant it was easy to gather game for food. In order to preserve game for later use, it was important to have a cellar. Not everyone used cellars but those who did were able to gather more and store meat in the cellar for later." Though ice cellar meat caches still find some use in permafrost areas, historically they had great importance to the Iñupiat Eskimos.

Overview

Even remote areas in Alaska now enjoy electricity, and areas which utilized traditional food storage methods today use home freezers. But a viable way to store food without additional expense is in an ice cellar. Ice cellars can be constructed anywhere there is permafrost. Ice cellars differ from root cellars in that they keep food frozen, not cool.

Suggested Learning Activities

1. You can only do this if you live around permafrost: construct a location for the cellar on high ground. Construct a small, airtight, insulated door for the cellar, then dig a hole in the ground the size of the door. Dig out a space inside of the hole as large as you desire , using steam where necessary. You may want to reinforce your walls, depending on their solidness. Store your frozen foods in the ice cellar!
2. Write an account of your activities so that others may learn from your experiences. (Right now, there is only one source of information on this topic; your article would make two sources!)

Resources

Very little seems to be published about ice cellar use and construction. All that was located was a single reference by Richard Reich, a former engineering student at the University of Alaska in his paper "Analysis of the Use and Construction of Meat Caches in the Arctic Slope." Home freezers have found their way into even the most rural communities in permafrost areas.

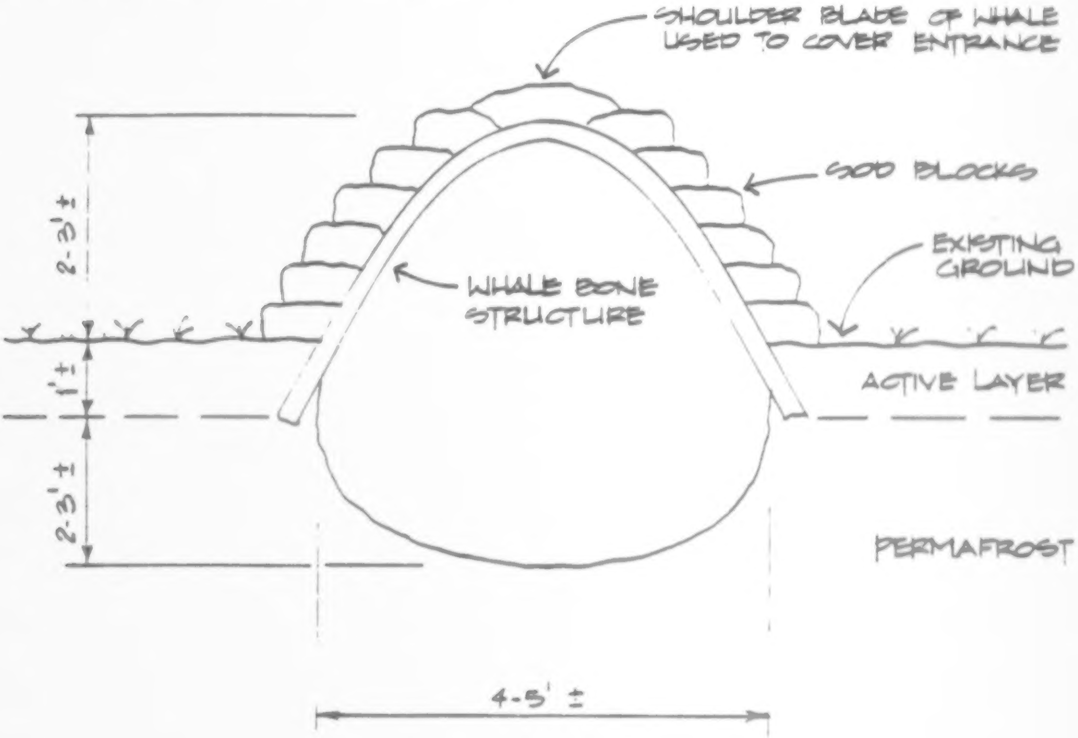
Books:

Cold Climate Gardening and Root Cellaring in Alaska: An Instructional Guide, by Shann C. Weston and Carla A. Kirts, School of Agriculture and Land Resources Management, University of Alaska-Fairbanks, Agricultural Education Publication No. 3, December, 1986. *This publication is a must for the natural resources teacher interested in fruit and vegetable preservation. The book primarily deals with root cellars, that is cellars 32° to 40° F, though some discussion of ice cellars is included on pp. 98-104. This book is a must for the teacher interested in self-sufficient gardening and food preservation in Alaska.*

Constructing an Ice Cellar

Where do I put an ice cellar?

A cellar should be located in high ground. If it is in the low ground and the entrance is not done well it has a tendency to flood during the spring thaw. Sod blocks are placed around the upper portions of the ice cellar (or *sigluaq*). The door needs to be airtight so warm air doesn't seep in. Historically ice cellars, or mat caches, were shallow in depth, only penetrating the permafrost a few feet. The introduction of metal tools, however, allowed the Iñupiat to dig deeper and larger ice cellars. The later ice cellars were dug well within permafrost to assure stability.



SIĠLUATCHIAQ

Historic Ice Cellar Reprinted Courtesy of Richard Reich

How do I dig the cellar?

Digging a cellar is hard work. You need to start with a good airtight entry way so you can take your time building it. You can also make it as big as you want. One user in Nome stated that he dug an ice cellar with a back hoe. Drilling rigs are sometimes used in the solidly frozen permafrost. Others use the painstaking methods of using pick and shovel. The ice cellar (or *sigluaq*) is first marked off on the ground with lumber. The digging them begins.

How do I reinforce the cellar walls?

A user from Barrow related that as the digging gets deeper the surrounding soil of the entrance shaft is shored with a lumber frame. Another user from Gambell related that in the olden days shallow ice cellars there were reinforced with driftwood and whale bones and covered with sod. In the frozen permafrost in many cases you will not need to reinforce the walls. Some reinforcement may be needed, however, as you dig the opening, a shaft, about four feet on a side. The shoring of the entrance continues until you are digging well into frozen soil. Then, a large cavity is hollowed out and the final size depends on the needs and preference of the user. The construction is completed with a wooden door stop the wooden shaft. The ice cellar user then constructs a ladder down into the cellar. Another user (who dug his ice cellar with a backhoe) insulated the inside with styrofoam. Others mentioned covering the walls of the cellar with canvas or other covering. All related that if the opening to the cellar is made small and is covered with an insulated cover in summer, that foods in the cellar will remain solidly frozen. Ice cellars can keep foods between 14° and 18° F. That temperature will keep foods stable up to 8 months.

Note: One advantage of ice cellars in food preservation is that they also keep outside air from getting to the foods. Frozen soil is impermeable to air. **But, ice cellars are dangerous to people.** The lack of oxygen inside has asphyxiated users. Users of ice cellars must open the lid and allow the ice cellar to ventilate before entering. This step is important. Also, it would be a good idea to station someone outside of the cellar at all times when someone is inside, keeping in contact with the person in the cellar.

Rendering Seal Oil
Teacher Page

Competency: **Render seal oil**

Tasks:
Obtain seal
Skin seal
Remove fat and blubber from seal
Chop fat and blubber into chunks
Place fat and blubber in jars
Scoop oil off jars
Store oil in a cool place

Introduction

As a resident of Barrow relates: "there are foods people get used to eating in a certain way. Many people use ketchup, soy sauce, mustard, mayonnaise, and seal oil with their meat. For some people it is hard to swallow a hot dog without mustard. For some people on Alaska's coasts, it is unthinkable to eat dried fish or dried meat without seal oil. "

Overview

Seal oil is a popular food item in coastal areas throughout Alaska. In some cases seal oil is bought and sold, but in most cases it is traded and bartered or distributed to family, friends and relatives. Many Native people use seal oil over dried or boiled fish, potatoes, or caviar (dog salmon eggs), or boiled seaweed. Seal oil is an important self-sufficiency food item for many Native Alaskans. An important point to remember is that seals may only be taken by Alaska Natives, as seals are protected under the Marine Mammal Protection Act of 1972.

Suggested Learning Activities

1. Interview local Native people who have hunted and killed seal. Find out how they render the oil for eating.
2. If you are a Native person, you may do this activity: hunt and kill a seal.
   Skin it and clean it, saving the organs. Preserve the flippers by burying them if you like. Butcher the meat and prepare it for storage.
3. Remove the fat and blubber from the seal, then render the fat by frying and simmering it. Prepare it for storage.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701

National Marine Fisheries Service, Box 1688, Juneau, AK 99802. (907) 586-7221. *Manages marine mammals and fisheries outside between two miles and two hundred miles offshore.*

Rendering Seal Oil

How do I hunt a seal?

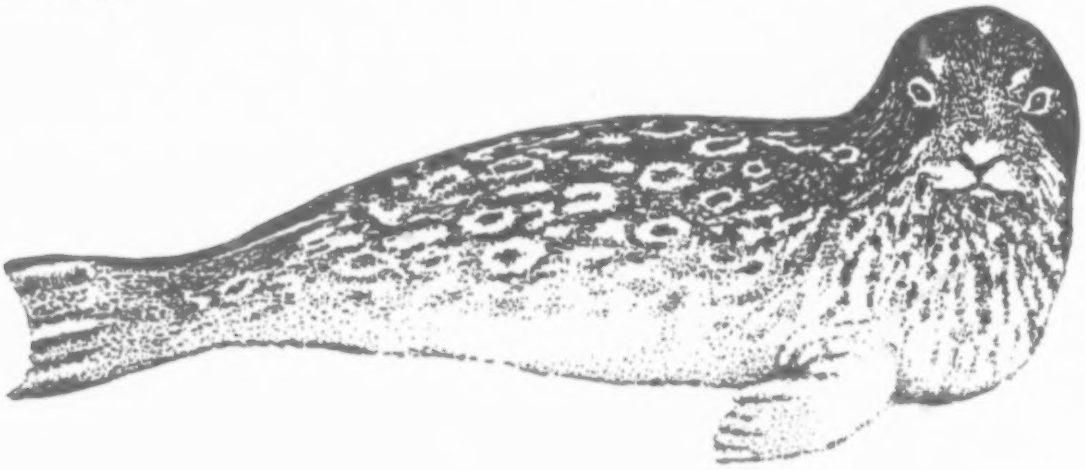
Remember, seals may only be taken by Alaska Natives. Historically seals were hunted with harpoons. On the northern pack ice hunters patiently waited by blowholes in the ice. When the seal emerged to breathe, it was struck with the harpoon. The harpoon trailed a strong line. The seal dove after being struck, but could be retrieved with the line.

In Southeast Alaska seals were hunted from wooden canoes. Today seals in the northern part of the state and in Southeast are typically hunted from skiffs, or, up north, from ice floes. Seals are usually hunted in winter. A Native of Petersburg, Alaska states that "seals are hunted in winter because they sink too fast when they're shot in summer." Because seals feed largely in the winter, their fat reserves are built up then, making them float when shot.

A former resident of Teller states that her father and brothers hunted seals in both summer and winter. They hunted in the rivers in the summer, from skiffs or from the beach.

How do I prepare a seal?

As a subsistence user in Barrow relates, "first slit open the seal down the front lengthwise. Then cut between the meat and the blubber all around. Cut open the chest and before you gut it out, save the heart, liver, kidneys, and as much of the intestine as possible. It is tasty stuffed with cooked fat. The rest of the gut may be trashed, if you don't have dogs.



"Section off the meat, and for the moment, boil some in a pot or baked with fresh onions in an oven. The remaining meat may be given away to relatives or put in Ziploc bags and placed in the freezer for future use."

A former resident of Teller notes that many families buried the flippers under dirt and rocks for several weeks in a permeable container, allowing them to ferment. The fermented flippers were then dug up and eaten. The former Teller resident relates that the flippers are called *"Bukuk"*–meaning "stinky stuff" or *"Dangnuk"*–meaning "aged."

How do I remove the fat and blubber from the seal?

As the subsistence user from Barrow relates, "start from the edge between the skin and the blubber. Keep going until you have separated the skin completely from the blubber, being careful not to puncture the skin."

A Southeast Alaska user states that the fat, a whitish material, is separated from the meat, and cut into chunks. She says that "old timers used to leave the fat lying outside for a couple of days in the open air, but seal oil may be rendered from fresh fat as well." The same user states that sometimes she freezes the fat overnight so that it is easier to cut up.

What's done next with the fat ?

The user from Barrow says to "cut blubber into strips approximately one inch by six to eight inches."

The Tlingit woman from Southeast related that to render the oil out of the fat, she puts all the fat chunks in a big iron skillet, melting it, heating the fat, simmering it, until the oil rises to the top. The oil is then dipped off with a ladle right into jars. The jars are sterilized and the oil is placed in them. (See "Canning" above). Oil may also be frozen in jars. The frozen seal oil turns pure white when frozen, though it may have a yellow tint from being fried.

After the oil is all ladled off, you can continue to fry the fat that is left until crispy. Then you can cool and eaten and eat it like pork rinds or replaced it in the newly-rendered seal oil for eating later.

How do I store the oil?

The user from Barrow says that a five gallon jug would be best for oil storage, though "if you need the oil right away, a jar would be fine."

Oil is stored in a cool place. In the northern part of the state seal oil could be stored in an ice cellar. The Tlingit woman from Southeast relates that she keeps it in the refrigerator, cans the seal oil in sterilized jars, or freezes it right in the jars.

Seal meat can be boiled and eaten with seal oil.

Freezing Foods
Teacher Page

Competency:	**Freeze foods**
Tasks:	Prepare foods for freezing Wrap foods in freezer wrap, foil or other protective covering Label foods Store in freezer, placing oldest foods in front or on top Determine necessary date of use of frozen products

Introduction

Though freezing products for preservation is nothing new to Alaskans, using a home freezer to do so is a new phenomenon in many rural communities. Freezing offers the advantage of uniform preservation, convenient storage, and easy access. Disadvantages include the cost of the freezer itself, the cost of power, obtaining power, and the problem of what to do when the freezer breaks down full of food.

Overview

To many Alaskans today, a home freezer is an integral part of a self-sufficient lifestyle. Freezing preserves foods no matter what the weather is. Knowing methods of freezing foods lends itself to some employment in the state, for example employment in the food service industry. But as thousands of Alaskans can vouch, a freezer makes an important contribution to providing foods for the family, independent of weather and other environmental factors.

Suggested Learning Activities

1. Ask an experienced food-preserver to give you a tour of his or her freezer. Notice how the food in the freezer is wrapped and labelled. How are the different foods organized?
2. Take fruits, vegetables, fish, or meat that you have previously obtained and prepared for storage (remember to treat fruits with antioxidant or honey-water glaze; blanch vegetables). Wrap these food products in freezer wrap, foil, plastic bags, or plastic containers. Label them with the product name and the date frozen. Store them in the freezer, grouping similar food products together. Use foods within six to eight months to prevent waste.

Resources

Cooperative Extension Service, University of Alaska–Fairbanks, 303 Tanana Dr., Fairbanks, AK 99701

Books and Pamphlets:

Freezing Combination Main Dishes, U.S. Government Printing Office, Washington, DC 20402. Stock No. 001-000-03559.

Freezing & Drying, Ortho Books, Chevron Chemical Company, 1984. Ortho Books, Chevron Chemical Company, 575 Market Street, San Francisco, CA 94105. *An excellent general text.*

Ziploc, booklets: *"Put the Lock on Freezing Meats & Poultry, Fresh Fruit, Fresh Vegetables and Baked Goods" ($1.00)* P.O. Box 4699GH, Monticello, MN 55365

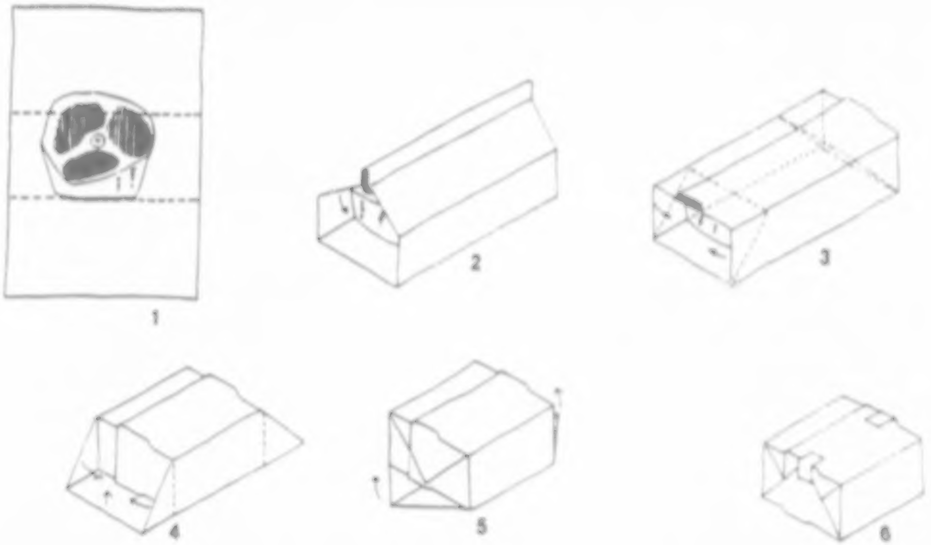
Freezing Foods

How do I get foods ready for freezing?

It always seems to surprise people in the Lower 48 that Alaskans would rely on a freezer for food preparation. After all, if it's so cold here, how could we need a freezer? As many Alaskans can vouch, a freezer is one of the foundations of a self-sufficient lifestyle, even if freezers do require electricity. One trick that many use is to keep the freezer in an unheated room or shed, minimizing the difference in temperature between the inside of the freezer and the outside temperature, thus saving electricity.

To get foods ready for freezing, it depends on what you are freezing. If you're freezing vegetables, harvest them when they're ripe, not overripe. To freeze vegetables, you'll first need to clean away any leaves and stems, wash the vegetables in cold water at least twice, replacing the water each time. Do not let the vegetables soak, as valuable water-soluble vitamins can be lost.

All vegetables be blanched (scalded) or sauteed before freezing. The heat destroys enzymes which can affect the flavor of the vegetables. Blanch the vegetables by steaming or submerging them in hot water. Vegetables may also be sauteed, or lightly fried in oil, butter or margarine before freezing. Some vegetables can be frozen uncooked. For example, chopped green onions can be frozen uncooked.



How to wrap meat for freezing, rectangular style

Why do I have to wrap foods in freezer wrap, foil or other protective covering?

Air is damaging to foods, even in the freezer. Foods may also be "burned" or dehydrated if they are not carefully wrapped in freezer wrap, foil, plastic bags or in plastic containers. Packaging is especially important in frost-free freezers, as the fan blowing over the foods can help dehydrate them.

Is it important to label foods?

Those who store foods–by smoking, canning, drying or freezing know the importance of properly marking the products stored. A magic marker, sticky tag, or a little slip of paper pushed under the see-through plastic indicating the product, and the date frozen, will make identification and product rotation easier at a later date.

How do I store the foods?

One advantage of frozen foods is that when they harden they are less vulnerable to crushing. Some products may be frozen in hard containers such as Tupperware or muffin tins, then, when frozen, they can be transferred to plastic bags or wrapped in freezer wrap for later use. If placing the foods in plastic bags, remove all the air before storage by pressing on the bag, sucking out the air with a straw, or using a shrink-wrapping machine.

A full freezer, while efficient, can be a lot of work, especially if you have a number of different products with different dates on them. An easy way to settle the problem of digging through the freezer to find something you froze earlier is to place similar products together in bags or boxes, duly labeled. It is easier to unload the freezer of several larger packages than a number of small ones. Remember to place the oldest foods on top.

When should I use these frozen foods?

Different products have different rates of decomposition in the freezer. A good general rule is to store foods for up to six months. After six months, foods should be used as soon as practical, even though it's true that mastodon steaks, frozen in Russian soils for tens of thousands of years, were cooked and eaten. Use the oldest frozen foods first, rotating the newer ones to the back (or bottom), and minimize the time products are stored, to minimize freezer burn and possible absorption of odors from other foods. By marking the date that foods are frozen, you can determine how long they have been stored.

Shelter Construction for Self-Sufficiency

Constructing a Summer Camp
Teacher Page

Competency: **Construct a summer camp**

Tasks:
Describe construction appropriate for temporary camp
Construct wall tent platform
Make and/or install stove
Saw, split, and stack firewood
Construct outhouse or toilet pit
Safely store and discard unburnable refuse

Introduction

Living in a summer camp is a historical part of the Alaskan lifestyle. Summer camp might have brought the family closer to a caribou migration, close to salmon runs or close to better berry picking grounds. Today many Alaskans, especially self-sufficient subsistence users still migrate to camps in summer to better utilize resources. Part of that process is erecting a summer camp.

Overview

Historically many of Alaska's Native people moved to "summer camp." This camp could have been a temporary structure at an excellent fishing site or a permanent camp located in the same place. Quick transportation has minimized the use of temporary camps, though hunters, fishers and others who practice a self-sufficient lifestyle may use a summer camp to better harvest resources, to save moving back and forth between locations.

Suggested Learning Activities

1. Visit a summer camp that someone else has erected. Have a look at how the tent platform is put together, how the tent walls were framed. How is the cooking area put together? What is the outhouse like? Ask the owners what they would do differently the next time around. Take photographs and careful notes for reference.
2. Invite someone to class who has had experience erecting a summer camp. Ask him or her to show slides illustrating the steps involved in constructing the parts of the tent platform, tent walls, outhouse, cooking area, etc.
3. Construct a temporary camp, using your notes from the above observations. Document your work with a camera as you go and keep a journal for future reference.

Resources

Building a Log Cabin, by Kathy Lynch, Adult Literacy Laboratory, University of Alaska, Anchorage, 1976. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

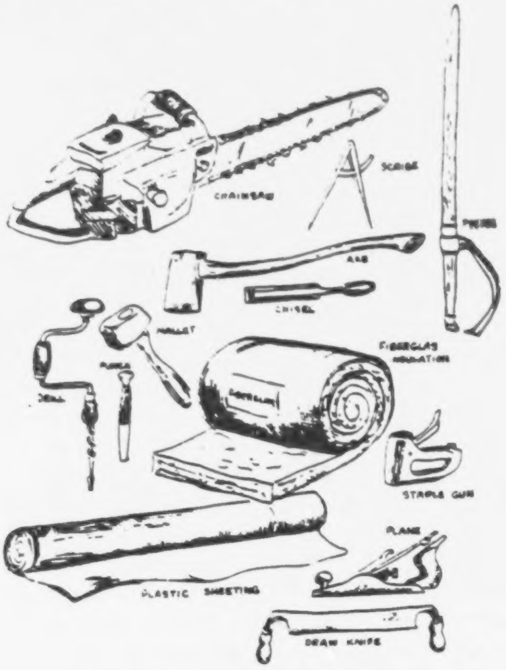
How To Build an Oil Barrel Stove, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

Constructing a Summer Camp

What kind of structure should I use in a summer camp?

Though historically Native people might have lived in sod huts or wood cabins, many of today's summer camps consist of canvas wall tents erected on tent platforms.

If you are considering building a log cabin, refer to Building a Log House in Alaska, University of Alaska Cooperative Extension Service, Fairbanks, Alaska, revised January 1977.



Tools and materials for building outdoors

How do I construct a tent platform?

Build your tent platform on a foundation of wood blocks or stones, well-placed to prevent wobbling.

A tent platform, like any floor, requires joists. You need to figure out how far apart to set the joists, which depends on the thickness of floor boards to be used. If you use thicker plywood or planks, the joists can be set further apart. If the plywood or planks are thick, nailing them in place is optional, as unnailed wood is easier to remove, shift to cover cracks, or lift for storage.

Some tent platforms are made of interconnecting covered frames to fit in an airplane. At the scene, you can bolt them together.

Tent platforms are useful because they keep the ground inside the tent from getting muddy, they keep the dust down, they minimize the intrusion of rodents and they make it easier to clean up. They minimize impact to the environment by reducing trampling of the vegetation.

Without a tent platform, you can place planks, stones, canvas, or scrap lumber on the floor of the tent to harden the surface where people will walk.

How do I install the stove?

Some pretty stringent requirements are in order when installing a wood stove. The stove must be properly distant from walls and the flue and chimney needs to be properly protected. Fire is the great hazard from wood stoves. Wood stoves are sometimes placed in canvas tents, with the wood venting through a hole in the tent through a metal stove jack. Such an arrangement is extremely hazardous, however, as the heat from the stove dries the canvas, making the structure prone to fire.

How do I saw, split, and stack the firewood?

Many self-sufficient people who burn wood use a chainsaw for efficient cutting. Try to pick standing dead wood that's near a road for easy hauling. When you're cross-cutting the logs, cut one stick of wood the length that you want the split logs to be, then use that stick to measure each of your cuts. Wood is sometimes split with the aid of a hydraulic splitter, but many still prefer to use a sledge, wedge, and splitting maul. Smaller cutters may split with a full-sized axe. Stack wood so it gets air, criss-crossed if you have room, in a row if you don't. In dry climates firewood can be stacked outside. In wet Southeast Alaska, it must be covered. Those in large cabins allow it to dry inside before using.

Do I need to construct an outhouse or toilet pit?

An outhouse has more value than just comfort. Not only are human wastes around a campsite unsightly, they can cause disease. Often the problem with digging a hole and constructing an outhouse over it is that the hole caves in and enlarges. Fifty-five gallon oil drums with the two ends cut out, placed in the hole as a sleeve (better still placed two deep) can help keep the hole intact. Additionally, such a deep hole will keep the wastes from being stirred up by surface water flow. In permafrost areas of the state digging such a hole is no easy accomplishment. An easy solution is to locate the outhouse or toilet pit in sandy areas which are not frozen. The toilet pit should be located away from streams, and down the hill or downstream from where you obtain water. For detailed plans, see the U.S. Forest Service.

What do I do with unburnable refuse?

If you can't eat it or burn it, pack it out. Obviously such a policy is not always practical for rural camps. On the other hand, as users can relate, the advent of throwaway cans, bottles, foil, glass, and other items has caused an explosion of refuse, even in Alaska's backcountry. A Boy Scout group from Anchorage, for example, recently led a pack horse expedition to a remote lake in the Arctic National Wildlife Refuge and packed out tons of refuse. It would have cost the government over $30,000 to remove that refuse. Neither the self-sufficient user nor the subsistence user needs to rely on the government or Boy Scouts to do their cleanup work.

Do pack out unburnable refuse if at all possible. If not possible, dig a pit away from your camp, place the refuse in the pit, burn it, and then bury it so that animals won't dig it up. You can burn the refuse in a barrel as well. Obviously you won't need to burn scrap metal. On the other hand, aluminum foil on which food has been cooked may be dug up in a matter of days. Nobody likes to camp–or live–in somebody else's trash and we all need to pitch in to reduce refuse.

Constructing a Winter Camp
Teacher Page

Competency: **Construct a winter camp**

Tasks:
Choose camp site
Erect tent
Identify and cut packed snow for igloo
Assemble snow blocks
Make and/or install stove
Saw, split, and stack firewood
Construct outhouse or toilet pit
Safely store and discard unburnable refuse

Introduction

The use of aircraft and snowmachines have reduced the historic reliance on winter camps. Today, a hunter, trapper or traveler can work a trapline or travel to another village quickly and efficiently, and return to home by evening.

Overview

Winter camps, like summer camps, are sometimes used by trappers and other self-sufficiency users. By necessity they are often more permanent or elaborate structures, as conditions get more harsh. Construction and camping techniques incorporate skills used by those building winter quarters. Emergency shelters can be constructed of snow.

Suggested Learning Activities

1. See those described in "Constructing a Summer Camp."
2. When your area receives a good snow, go out and practice building a snow cave or igloo.
3. Alaska Wildlife Notebook Series and Alaska Wildlife Notebook Series Activities Guide for Teachers: Scientific investigation of the insulation properties of snow (and ptarmigan survival), p. 73.

Resources

Books and Pamphlets:

Building a Log Cabin, by Kathy Lynch, Adult Literacy Laboratory, University of Alaska, Anchorage, 1976. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

Fieldbook, Boy Scouts of America, Irving Texas, 1984

Constructing a Winter Camp

How do I choose a site?

Often the person who chooses a winter site is choosing the site for their year-round cabin. Though historically many of Alaska's Native people may have moved to a summer camp every year, today's snowmachines, aircraft, boats and other modern devices allow Alaskans to live in the same place year-round. Such building sites are chosen just like any other building sites are chosen. The site should be chosen so to gather solar energy, in general, south facing. The home can be heated passively by the sun. The person constructing the cabin or camp also should think about winter wind. The house or tent can lose considerable heat from the wind. Some cover, by a hill or trees, will help shelter the camp from the wind. Cabins or other heavy structures should be built on solid soil, away from eroding river banks, and above flood plains. Building on slopes which are too steep can invite mud slides in summer or during thaws.

How do I erect a tent?

A tent can provide adequate temporary winter housing in a pinch, but only log cabins or insulated structures with a stove can offer true shelter in sub-zero temperatures. Some tents are equipped with stoves. See "Constructing a Summer Camp" above.

How do I identify and cut packed snow for an igloo?

A snow cave shelter can be an important survival shelter in a pinch. As the National Rifle Association states, "snow caves are difficult to dig without getting wet. For this reason, they are less desirable than other types of shelter. However, snow is a good insulating material that can keep you warm in a survival situation." Use a tarp or poncho and a foam pad underneath you, if possible. That will help insulate you from the cold ground.

"A snow cave should be deep enough to sit in. When shaping a snow cave, arch the roof outside so moisture from melting snow will run down the sides of the cave and not drip on you. Do not make the cave's roof exceptionally thick. The cave should be shallow enough and the roof thin enough so you can break through the snow and stand up if a cave-in should occur.

"Punch a ventilation hole in the roof. Keep it open by ramming a stick through it occasionally. It is very important to clear drifting or blowing snow from the vent so fresh air keeps circulating within the cave.

"Chop a roomy bench or sleeping shelf at least one foot (30 cm) above the cave entrance and cover it with tree branches." (Basic Hunter's Guide, p. 251)

How do I assemble snow blocks for an igloo?

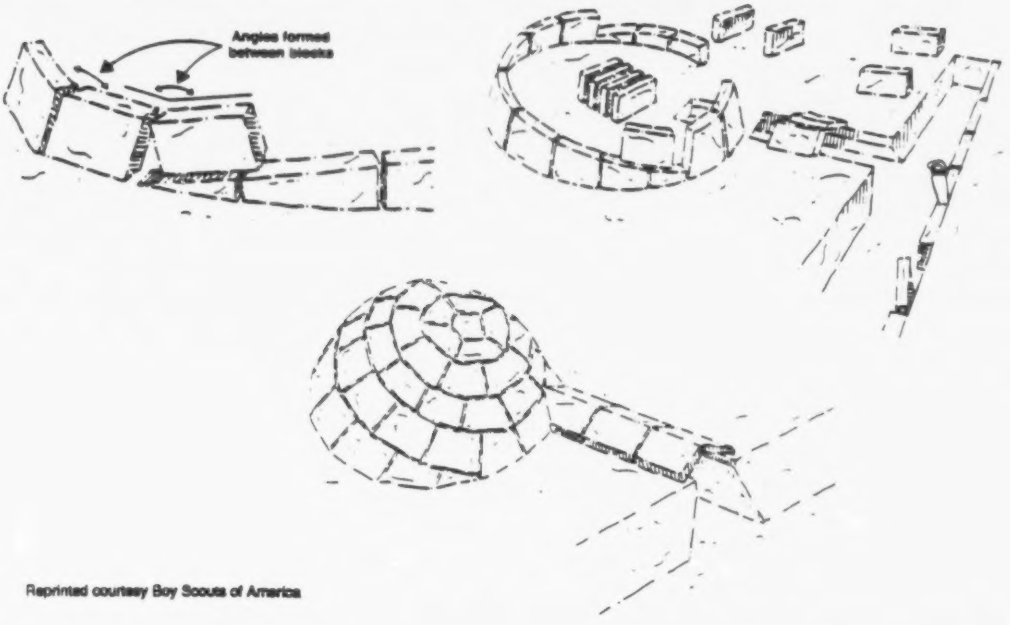
If the snow for a cave is not deep enough, you can mound snow up 6 feet high and push stakes into the top part of the pile, pointing inward, like spikes sticking out of the snow. Hollow out the inside of the mound, creating the cave in this dome. Fashion a door by piling snow on a ground cloth, gathering up the four corners, and typing them with a cord. Pull that ball over the door to seal the cave. Punch holes in the cave for ventilation. Never burn a stove or lantern inside the cave as it will release carbon monoxide.

If you're really intent on building an igloo like those you've seen in the movies, and indeed, Eskimos built such structures, you'll need hard snow. If the snow is so hard that your boot doesn't leave prints, it's good snow. As Tom Johnston and James Phillips write in Fieldbook:

"The best snow is that on open, gentle windswept slopes. For the snow to be firm, temperatures must be no higher than 10° at night, and no more than 25° during the day. Subzero temperatures assure snow of the best quality. Test it by pushing a ski pole into it; there should be firm resistance for at least 36 inches. For an igloo large enough to sleep five campers comfortably, clear away soft surface snow from an area about 20 feet by 40 feet in size. This will be the "quarry" from which you'll take blocks for the igloo.

"Using a full-size carpenter's saw, cut from the quarry blocks measuring 6 inches by 30 inches by 36 inches. The first block or two won't come out cleanly; use a shovel to clear away the debris until you can chip into the hole left by the removal of the initial blocks. From then on, you can cut each block cleanly along its back sides, and base, and carefully lift it from the quarry. Line up blocks on edge on the slope above the quarry. As you work, keep the sides of the quarry square and accurate, and take care to make the blocks uniform in size. Good igloos require 40 to 50 large well-shaped blocks, not random pieces of snow.

"After the blocks are cut, use a ski pole to draw a perfect circle with a 10 1/2-foot diameter. The outside of the circle should be about 8 feet up the slope from the quarry. Use your feet to tramp down the snow just outside the line marking the circle, and set snow blocks side by side along it to form the first tier of the igloo. Using the saw for precision shaping, taper each block slightly and lean it inward just a little so all the blocks lock solidly against one another. Pack snow against the outside of the blocks.



Reprinted courtesy Boy Scouts of America

"Next, remove one of the blocks to create an opening in the tier and carry as many blocks as possible into the igloo; it's much easier to build with them if you and the locks are inside. Replace the entrance block and use the saw to cut two slopes about 5 feet long in the first tier of blocks. These slopes are called spirals, and they are essential to the success of your igloo-building efforts.

"Finally, add a few last touches to make your house a home. Cut a ventilation hole near the top of the roof, bring your sleeping bags and the pads in through the maintenance entrance, and then close it off by replacing the snow block. Stow the rest of your equipment in the entrance tunnel.

"An igloo is a very effective winter shelter, one that will last for months if temperatures remain low." (Fieldbook, pp. 348-351.

How do I warm the igloo?

Historically stoves in igloos were tallow ones. Modern gasoline stoves and lanterns can be dangerous in such a well-sealed structure as they can give off carbon monoxide. In fact, on Mt. McKinley just a couple of years back, some climbers who had sealed up their tent well had been warming themselves with a white gasoline stove. They were found dead in their tent. Climb into a heavy sleeping bag in the igloo. Insulate yourself from the snow floor with a foam pad, spruce boughs, newspaper, cardboard or other insulating material. The igloo will offer, just from your body heat, a temperature well above the outside temperature–a relatively comfortable 25° to 30° F.

How do I saw, split, and stack firewood?

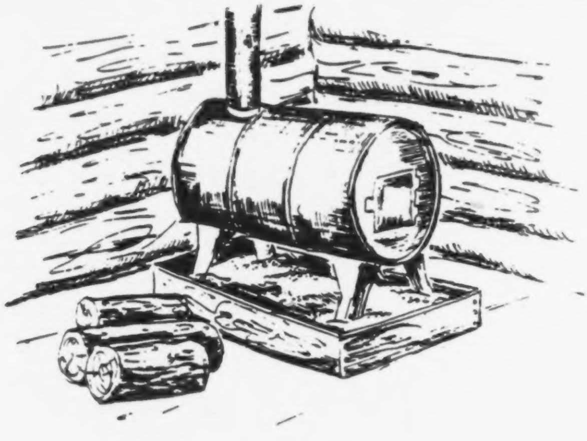
The method of gathering and storing firewood will differ for different parts of Alaska. Some on Southeast Alaska tow logs which have been washed up on beaches. Many use a pickup truck, chain saw, maul, sledge and wedge, and axes just like firewood is cut and stacked everywhere. Some long-term users' tricks include cutting the wood long enough in advance to allow it to dry, cutting dead cedars (in Southeast) or other trees which dry standing. The fewer times wood is handled and hauled, the more efficient the operation. To split, log rounds (lengths cut to stove size) are laid flat side up and they are broken with a splitting maul, striking with the grain, like spokes on a wheel. Wood stacked criss-cross for proper drying, covered (with air circulation), good tight fittings on the wood stove, properly dried wood, and a clean flue, not to mention a modern or well-built hand-made wood stove will all contribute to self-sufficient home heating.

How do I construct an outhouse or toilet pit?

Outhouses or toilet pits range from simple holes in the ground for infrequent use to elaborate wooden structures with a half-moon on the door. With the exception of the intertidal area along the coast, for repeated use, an outhouse should be used. An outhouse concentrates wastes in one place, and if properly dug, allows them to filter into the ground instead of washing into streams. Elaborate outhouses are constructed from plans. Simple outhouses involve a box with cut-out seat placed over a pit. The pit can be lined with a "sleeve" of one or two 50-gallon drums.

What do I do with unburnable refuse?

IIn some cases, carrying out unburnables is impractical, however, it does not take a great deal of effort to create a burn barrel, to burn everything, including cans and foil, and then, when the burn barrel piles deep, to dig out the cold ashes, glass, cans and metal, and to bury them. Burning everything condenses and compacts the material, and destroys food and other residues which will attract wildlife. Bears will dig up anything that remotely smells of food. Too many self-sufficient users in Alaska take wild places for granted and leave their refuse. No one likes to run across things that others have left, so pack out, burn, or bury what you and others have left.



Utilize Transportation for Self-Sufficiency

Maintaining a Dog Team
Teacher Page

Competency: **Maintain a dog team**

Tasks:
Buy, sell, and/or trade dogs
Recognize individual differences/skills per dog
Maintain good rapport with dogs
Feed dogs
Maintain dogs' health
Construct and maintain dog yard
Make dog harnesses
Make dog collars
Make dog booties
Train dogs to pull a sled
Train lead dog

Introduction

Dog mushing is fast becoming one the most high-profile endeavors in Alaska. The finish of the Iditarod dog race, from Anchorage to Nome makes the national–and international news services each year. In some places dogs serve functional uses, pulling sleds of caribou carcasses or providing transportation between villages. Mushing dogs is an important part of the self-sufficient lifestyle in Alaska.

Overview

Employment related to dog racing, such as sales of dog food, amenities and health services, continue to grow as dog mushing grows in preponderance. A magazine supporting dog mushing has emerged. Some Alaskans partially support their self-sufficient lifestyle by breeding and trading dogs. Other related jobs include veterinarians for races, race officials, snow-machine drivers to break and mark trails for races, pilots to fly food and people, and news reporters. Dog handlers on the race trails do not get paid. They receive room and board and sometimes dogs. Handlers are usually people who want to start their own teams and need some good dog lines to get started. They work for a top name musher and receive puppies in return.

Suggested Learning Activities

1. Invite a local musher to class to discuss his/her experiences in buying, selling, trading, training, feeding, and mushing dogs. Ask what is involved in maintaining rapport with the dogs, taking care of their health, providing space, and making special equipment for the dogs (harnesses, collars, booties, etc.)
2. Watch the film about George Attla, former Iditarod champion, "Spirit of the Wind" or view the 30-minute video, "Racing the Wind," by KYUK Video Productions in Barrow. Identify some of the challenges of maintaining a dog team.
3. Accompany a musher through a full day of his/her activities with the dogs. Write about what you learn.
4. Work as an dog handler on a race trail or for a musher who just needs some help. Write a journalistic article about your experiences; send it off to a local paper for publishing.
5. During the Iditarod race, watch TV, listen to the radio, and read the newspaper to follow the path of the Iditarod. Use colored pins on a wall map of Alaska to trace the progress of the lead mushers. As the mushers progress, label your map with weather conditions at each checkpoint.
6. IF YOU CAN: buy dogs and organize your own dog team:
   Train the dogs to pull a sled, and train one or two dogs to lead. Care for their health and pay special attention to each dog by petting them and calling them all by name. Build a yard for your dogs with plenty of individual space, individual houses, and posts with lines. Try making your own dog collars and booties.

Resources

Alaska Dog Mushers Association, P.O. Box 662, Fairbanks, AK 99707. *Statewide mushers organization.*

Alaska Dog Mushers Museum, P.O. Box 2075, Fairbanks, AK 99707 (907) 457-6874. *Open summers. Has information on mushing, its history and methods.*

Kobuk Fuel & Feed, Box 1599, Fairbanks, AK 99707. (907) 474-9078. *Supplier of mushing materials, dog food, and winter headquarters of Alaska Dog Mushers Association.*

Wilderness Ways, P.O. Box 80434, Fairbanks, AK 99708 (907) 455-6224. *Offers a complete line of parts for Tim White™ sleds and QCR runner systems. Also carries fully-made sleds.*

Books, Magazines and Videos:

"Alaska Feeder," newsletter of Alaska Mill and Feed Company, Fairbanks, AK.

"Building a Dog Sled," by Marsha Million, Adult Literacy Laboratory, University of Alaska Anchorage, February, August, 1974. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

The Dog in Action by McDowell Lyon, Howell Book House Inc., 230 Park Ave., New York, NY 10169.

Dogs of the North, Alaska Geographic, Volume 14, Number 1, 1987, P.O. Box 93370, Anchorage, AK 99509. *Full of color photos. Available at most Alaskan bookstores.*

How to Raise and Train a Siberian Husky, T.F.H. Publications Inc., 211 West Sylvania Ave., Neptune, NJ 07753. *A basic book on raising dogs.*

"The Iditarod Runner," Iditarod Trail Committee, Anchorage, Alaska

Mushing Magazine, P.O. Box 149, Ester, AK 99725 (907) 479-0454

The Secrets of Long Distance Training and Racing by Rick Swenson with Steve Chamberlain, L & B Color Printing, Wasilla, AK 99687. *Available from Rae's Harness Shop in Anchorage.*

The Yukon Quest dog race publishes an annual booklet .

"Racing the Wind," 30 minute VHS video, 1985. *Available through the Alaska State Film Library or from KYUK Video Productions, Pouch 468, Bethel, AK 99559 (907) 543-3131. One of the most exciting dog mushing videos ever made.*

Maintaining a Dog Team

How about tips on buying, selling and/or trading dogs?

"Buy proven blood lines and raise lots of pups. Be aware that people sell or give away dogs because they aren't good enough for their teams. This is okay if you have a recreational team. Always ask what is wrong with the dog–you don't want fighters or behavioral problem dogs (spooks). Most people will let you try out a dog to be sure it works for you. The best way to get a good dog is to raise it as a pup. Mushers will let you buy breedings from select dogs. Good mushers have traits they look for which make well-proportioned dogs. It's hard to explain what makes a good-looking dog. The Dog in Action has several chapters on what makes a well-proportioned dog."

It must be noted that maintaining a self-sufficient lifestyle by raising and racing dogs is a long-shot indeed. As the rural Alaskan musher notes:

"In order to race a musher needs a sponsor. Racing entry fees are high and getting food is expensive. Most people who place do not even make enough from their winnings to cover what they spend on the race–unless you place real high or win the race."

What about individual differences/skills for each dog?

"You can tell by size and intelligence. You usually want your biggest dogs in wheel or right before wheel so they can use their weight to help maneuver the sled. You can also tell which dogs are really keyed in to you and which dogs are the smart ones. These dogs will come to you when you let them loose. They go up front along with the smaller and quicker ones. If a dog has behavior problems you put him in back so he knows you are watching him."

How do I maintain a good rapport with dogs?

"For a breeding kennel this starts as pups. We LOVE our pups, pick them up, play with them every day, name them at one month and use this name, talk to them when we feed them and let them know with a harsh voice if they are doing something wrong. A pup who will listen to you will grow into an adult dog who will listen.

"We don't just feed our dogs. Feeding time is special because everyone gets petted after they eat. It's a good time because they are settled down after they eat. After a run each dog in the team gets petted when you unharness. The leader gets petted an especially long time.

"We feed our dogs well and this keeps them happy. We love them and care for them and they love us and work for us."

How about feeding the dogs?

Something to remember is that maintaining a number of dogs is expensive. The time when you could feed the dogs solely from foods you hunt or trap or catch is over.

As the rural Alaskan musher writes:

"This is different for every musher. It is expensive; we order two tons of food on the barge in the fall. It costs thousands of dollars and lasts us all winter. Racing dogs take special feeding before the race. People order chicken, burger, beaver, liver in big 40 lb. blocks.You always want to be sure your dogs get lots of water with their food–for hard working dogs dehydration is a much bigger concern than keeping the dog fed."

How do I maintain dogs' health?

"You practically need to be a vet. Dogs get wormed about every other month for tapeworms, round worms, and hook worms. Dogs need yearly vaccinations for parvo, coronna, distemper, rabies, kennel cough and leptosporosis. Some vaccines take care of most of these.

"We keep antibiotics and vitamin B complex around for dogs who get hurt–mostly bites from other dogs, although this happens infrequently because we do not allow fighting. Our dogs are good about not fighting.

"We lose about a third of our pups to parvo or coronna viruses each year. They get the virus up to four months old, have bloody diarrhea and throw up and get dehydrated. We do nurse some through by putting them on an IV of Ringer's Solution.

"Foot care is a whole different yet very important part of health care. The January 1988 issue of Mushing Magazine has a good article on foot care."

How do I construct and maintain a dog yard?

"Gravel bed, adequate room to keep dogs from reaching each other and daily maintenance are all important tips on maintaining a dog yard. Some people put each dog on an individual post, others put them on picket lines with 6-10 dogs on a long line. Each dog should have a dog house. The dog house should have fresh straw when it is really cold or really wet outside."

How do I make dog harnesses?

"My husband responded with 'with a $13.00 bill.' We buy these–lots of people will buy some then use them as patterns to make more."

Richard Burmeister shows a simple way to make racing harnesses from 9 to 12 feet of webbing. He pads the harnesses with woolen or synthetic material.

How do I make dog collars?

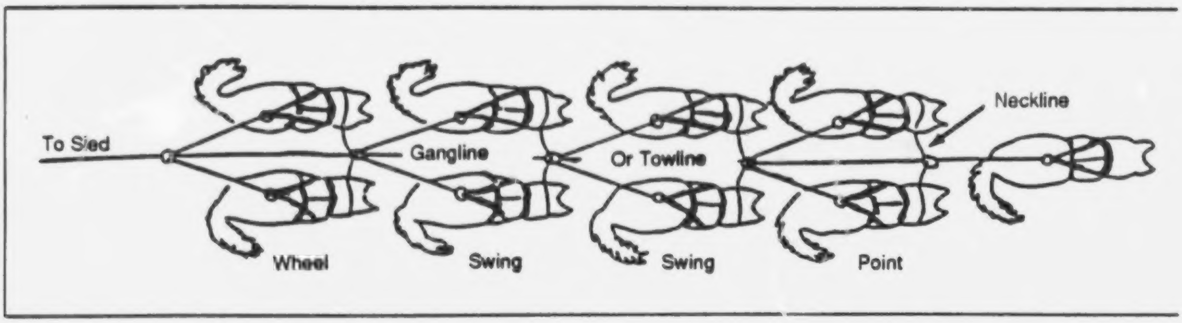
"One-inch nylon webbing with one and a half inch O rings sewn to the size of the dog. You want to be able to slide it over the dog's head, but not so loose that they can slide it themselves."

How do I make dog booties?

"You can make booties using one inch of Velcro and ten-ounce polypropelene fleece. You sew the polypropolene in a short sock-shaped sleeve, and the Velcro so that it pulls tight around the leg of the dog. Booties fall off really easily and you lose lots of them. You need thousands of them to run a long-distance race."

How do I train dogs to pull a sled?

As a rural Alaskan musher states, "You don't really train a dog to pull a sled–they are bred for it. What you train for is speed, endurance and consistency. Pups are put in harness at six months. The first pup run is always real funny because they bounce all over; up and down, sideways, they look around and don't quite know what to do. By the end of the mile-long first run they are usually settled down and pulling. We always run a good leader and swing dog with 4-5 pups on this run.



This illustration shows the configuration of the double tandem hitch, the most versatile hitching arrangement. The double tandem is popular with mushers because the short lines do not snag or tangle easily and the dogs break two trails, in which the sled runners follow

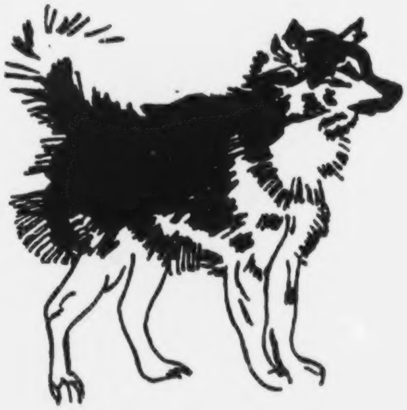
"The hardest part about training pups is to get them to sit still while you are hooking up or stopped on the trail. They are just so excited they can't stand it. We will discipline the pups only after they have gained confidence to run. They also like to chew their harnesses and lines so you really have to watch them. We try to run them three times a week and build up distance this way. You can usually tell about 1-3 months into breaking pups which ones are workers and which ones are not sled dogs. If their line is slack they are not pulling, some like to always look around and goof off, others simply can not keep up. These pups do not make the team. We very rarely whip a dog to get him to pull–either they want to and they will give you everything they have or they don't. We do stop the team to discipline if a dog is goofing off and it is a dog we think has what it takes to be good–just needs to settle down. After their second season we do not need to discipline them at all–except when hooking up sometimes because they get so excited."

How do I train the dog leader?

"Good question. Many mornings have been spent around our kitchen table discussing this problem. The key is once you have a leader new leaders are easy to train because you run them in swing (behind lead) and they catch on–then you put them in double lead with a good leader and he will pull them around–you just keep them in for short intervals because you do not want them to get discouraged and you always make sure their line is tight in lead. As soon as it goes slack they are no longer working and you take them out.

"I trained a leader without the help of another leader this spring because my husband took all the racing dogs and I was left with an assortment of pups, yearlings and pregnant females. So what I did was hook up a small team of five dogs with my leader in single lead. The little female who I had planned on becoming my leader since she was a pup (because she listens to me so well) did not work–she kept goofing off and letting her line go slack and the swing dogs catch up. There I was a mile away from home with no leader so I put in this little dog who my husband had put in lead once with an experienced leader. The dog took off like a bullet–he didn't know which way, but he knew to go.

"If I wanted him to turn off the trail to the right I would say 'GEE!' Then if he didn't, I'd put on the brake. That would make him look around. If there was still no turn, I'd set the snow hook, walk firmly up, pick him up, saying 'GEE, GEE, GEE', then firmly set him in the direction I wanted to go. It's good it was a warm April because lots of times he'd just go back where he wanted–that was okay, though; it means he has a strong head. But if I had told him to go 'GEE' we would to through the pick up thing until he'd go the direction I wanted. It's good for leaders to have strong heads but never let them reverse your direction. By the end of the month my leader knew 'HAW!' but still didn't know 'GEE!' I can't wait to run him this fall."



Boat Construction
Teacher Page

Competency: **Construct a boat**

Tasks:
Design boat
Obtain permits for timber, if necessary
Fell timber
Age timber
Saw boards
Form boards into boat form
Fasten boards
Caulk seams

Introduction

A number of very light weight, very strong aluminum and fiberglass boats are available. Boat construction is fast being relegated to the domain of an art form. Those who have the time and inclination, however, can construct an excellent vessel using skin and wood and/or fiberglass or may construct their own aluminum vessels, though doing so requires sophisticated equipment.

Overview

Custom boatbuilding is found in the state, though many self-sufficient users buy new or used aluminum skiffs or fiberglass skiffs. Buying second-hand may be the cheapest route. Jobs related to boat construction include that of craftsperson and shipwright.

Suggested Learning Activities

1. Invite a boatbuilder to your class to show slides and to discuss the steps involved in making your own boat. OR: visit the boatbuilder's shop and see for yourself some of the tricks of the trade.
2. Obtain traditional boatbuilding designs: conduct research in historical books, museums, and historical societies. OR Select a contemporary designs from sources listed below.
3. Determine which materials you will need to build your boat and buy or scavenge them.
4. Build your own boat! Keep a daily log of your activities. Caulk, oil, or paint it when it's all fastened together.

Resources

Alaska State Museum, 395 Whittier Street, Juneau, AK 99801 (907) 465-2901. *Sells plans for traditional kayaks drawn up by David Zimmerly of Ontario, Canada.*

Baidarka Historical Society, Box 18, Belcarra Park, RR1, Port Moody, British Columbia V3H 3C8. *Effort of historical boat builder George Dyson. Note his book below. Contact George at this address or refer to* *__Baidarka__*, *his book.*

Ed Opheim Jr. or Sr., Box 129, Ouzinkie, AK 99644. (907) 486-6526. *Ed Sr. is one of the master boat craftspersons of Alaska. His son has carried on the tradition. Until recent times their boats were made solely of local lumber.*

Multi-Hull Designs, c/o John Marples, 4530 Firmont Dr., SE, Port Orchard, Washington 98366. *Sells plans for 8', 10' and 12' cold form wood epoxy and fiberglass boats. Excellent designs.*

Northwest School of Wooden Boat Building, 251 Otto Street, Port Townsend, Washington 98368. *This school specialized in carrying on the tradition of wooden boat building. Includes on-going courses, weekend workshops and summer seminars. Eligible for Alaskan vocational student scholarships–inquire at Northwest School for information. May be instituting a special summer program for vocational teachers.*

Books and Magazines:

Baidarka, George Dyson, Alaska Northwest Publishing Company, 130 Second Avenue South, Edmonds, Washington, 98020, 1986. *A thoroughly readable historical/technical/how-to text on construction of Aleut-styled baidarkas using modern materials. A must for the boat builder.*

Bark Canoes and Skin Boats of North America, Adney and Chapelle, Smithsonian Institution, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, 1964, Bulletin 230. *The authoritative text. A thoroughly-researched text.*

Building a Strip Canoe, Gil Gilpatrick, DeLorme Publishing, P.O. Box 298, Freeport, Maine 04032, (207) 865-4171. *Plans for eight canoes.*

Build the New Instant Boats, by Harold Payson, International Marine Publishing Company, 21 Elm Street, Camden, Maine 04843 (207) 236-4342, 1984. *A highly-regarded paperback text.*

The Gougeon Brothers on Boat Construction, P.O. Box X908, Bay City, Michigan 48707, 1985. *Hardback. Traces boatbuilding from start to finish.*

Canoecraft. A Harrowsmith Illustrate Guide to Fine Woodstrip Construction, Ted Moores and Merilyn Mohr, Camden House Publishing, Ltd., 7 Queen Victoria Road, Camden East, Ontario, K0K 1J0 Canada.

Instant Boats, by Harold Payson, International Marine Publishing Company, 21 Elm Street, Camden, Maine 04843 (207) 236-4342, 1982.

"Small Boat Journal," Box 400, Bennington, Vermont 05201. *Published bimonthly. Of particular interest is an article by David Zimmerly in the April/May 1983 issue entitled "Building the One Hull Aleut Bidiarka." Part II of this article is found in the April/May 1983 issue.*

"Wooden Boat Magazine," Box 78, Brooklin, Maine 04616. *Published bimonthly. An article in volume 58, page 69 by Dave Kubiak of Kodiak/Aleutian Regional High School, 722 Mill Bay Road, Kodiak, AK 99615 (907) 486-3131 pertains to construction of traditional Aleut and Kodiak-area boats in a vocational class. Also, page 74 of the same volume features an article entitled "The Hooper Bay," about building a Hooper bay kayak.*

Boat Construction

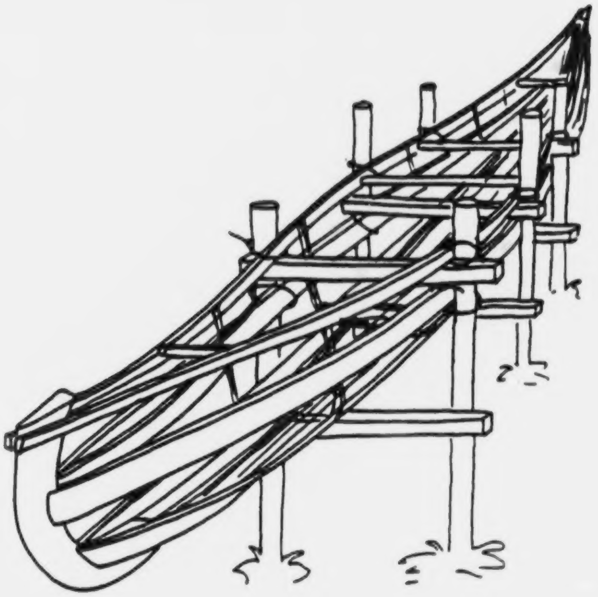
How do I design a boat?

Some people obtain boat designs from traditional boat makers. Skin boats from the arctic and birch bark canoes from the Interior. Aleuts also constructed boats of skin and Southeast Alaska Indians utilized wooden canoes hollowed out of giant cedar trees.

Techniques for traditionally-constructed vessels can be found in historical works or from boat builders in villages. Traditional Euro-American boat building plans are available from some of the places listed in the teacher page.

What materials should I use?

Most boats used for self-sufficiency today are usually made of wood, fiberglass or aluminum. A good way to obtain a boat for self-sufficiency purposes might be to buy a used aluminum or fiberglass skiff. But traditional methods are still used. For example, a class at Kodiak College uses native spruce for stringers and frames and aircraft skin in making traditional kayaks. Traditional *umiaks* are made and used on St. George Island, though they are covered with canvas rather than the traditional sea lion skins. Traditional walrus and sea lion skin boats are used for whale hunting in Gambell, Savoonga, Wales, Diomede and Barrow. These boats are quieter than motor boats, especially when equipped with a sail. After the whale is struck, a motor is used to pursue the struck whale and to bring it in. The motor may be placed on the blunt end of the boat or in a well within the boat.



How about the processes in constructing the boat?

A number of processes can be used in boat construction. Historically, Tlingit and Haida peoples built canoes of hollowed-out logs. These canoes held two or three paddlers. Tlingit and Haida peoples also constructed huge war canoes of hollowed out cedars. These canoes held 30 to 40 paddlers. Some of these re-stylized craft can be seen in museums or under shelters in Sitka.

Modern boats for self-sufficiency in Alaska include reconstructed and revamped used boats. These boats may be aluminum, fiberglass or wood.

Modern boat construction takes a number of forms. It is a precise art that is considered an art. The skin kayaks of the Aleut people have been recreated using modern materials in Kodiak and Bellcarra Park, British Columbia. For some purposes, these vessels are superior to more modern boats. In fact, the recent boom in recreational kayaking owes much to the superior design of the Aleut baidarkas. Baidarkas are today constructed of aluminum tubing or spruce frames covered with fabric.

Other processes include cold mold epoxy and fiberglass over wood construction. These vessels, based on such designs as John Marple's "Multihull Designs" are light and hardy. A 10-foot skiff can weigh as little as 50 lbs., a 12-foot skiff, 80 lbs. Aluminum vessels are constructed in several boat yards around the state.

Ed Opheim, Sr., a boat builder in his late 70s at Ouzinkie, on Spruce Island, near Kodiak, has from 1932 until recently, been building boats completely of local lumber. Ed used local Sitka or Spruce Island spruce, cut the trees, hauled them to his property–originally using skids, later, a bulldozer–milled the lumber, using a 52-inch circle saw and a power planer. His boats were made of planks, fastened with copper, bronze, stainless, and galvanized nails.

What are steps are involved?

George Dyson states of hand-made baidarka building, "the beauty of baidarka-building is that so much of it is repetitive, 'mindless' work–exactly those tasks that provide precious and uncluttered time to think. One is free to daydream, become lost in thought..."

After the boat is planned, the frame is laid out and the fabric or other covering are applied, then the boat is sealed and painted. However complicated the end product, the basic steps are the same. Ed Opheim, Sr. built from experience. He crafted the boats from knowledge, not plans. Most beginners, however, need to follow plans from books, unless they apprentice with a master craftsperson.

How do I saw the lumber?

Some boat builders saw and age their own timber. For example, George Dyson, with his re-creations of the Aleut baidarka, cut wood for the crafts himself. Ed Opheim built vessels milled of local spruce, and some making umiaks in the Bering sea use beach lumber for frames. Saws for such lumber vary from huge 52-inch circle saws, chain saws to Alaska lumber mills, table saws, to band saws. Because of the tolerances required in boat building, and because machine planing is needed, today most boat builders buy their lumber. Wooden boats require consistent care. As such, many self-sufficiency and subsistence users have moved to aluminum or fiberglass craft. But remember, in 1898, thousands of gold rush miners made their way down the Yukon River from Lake Lindeman in homemade, whip-sawed boats.

How do I form the materials?

Forming depends on the materials and type of boat. Historic Aleut and Eskimo kayaks worked and shaped driftwood. The complete framing system was completed before the skin covering was attached. Today's fabric boats of aluminum tubing employ tube benders. Stems for strip canoes call for steam-bending, which can be done using a kettle and cardboard tube at home. (see Canoecraft, p. 91) Payson's "instant boats" are constructed of plywood which bends easily. Aluminum for aluminum craft is bent using machine tools.

What fasteners should I use?

Fasteners vary according to the boat and materials. George Dyson, with his hand-made baidarkas, lashes them with cord. Historically, birch bark canoes were held together literally by the bark covering, unlike kayaks, which had skin stretched over a rigid frame. Aluminum vessels are riveted and may be welded. Harold Payson in his book Instant Boats, uses bronze and copper nails of varying lengths for his excellent wooden vessels. Other fasteners, especially for the new boats of wood and epoxy, might include tacks and tape. Ed Opheim, Sr. used copper , bronze, stainless, and galvanized nails. Nails and screws are important in boat building. Use exact sizes and materials called for in plans.

How about final touches like caulking?

Skin boat seams were historically coated with blubber or animal fat. Skins were regularly oiled to keep them watertight. Birch bark seams were coated with spruce or pine gum. George Dyson's baidarkas, covered in tough nylon, are coated with hypalon/neoprene sealant. Thus, the seams are waterproof without any further preparation. Epoxy-fiberglass boats also require no traditional caulking at seams, because they do not have seams. Ed Opheim's contemporary wooden plank boats use a commercial rubber compound for caulking. His fine wooden craft could be either oiled or painted, though he prefers oiling, as it doesn't scale off.

Sled Construction
Teacher Page

Competency: **Construct a sled**

Tasks:

Construct tow sled for snow machine
  - a Select wood for sled
  - b. Steam and form runners
  - c. Form stanchions
  - d. Tie stanchions to runners
  - e. Form and tie handle bars and cross pieces
  - f. Steam top rail and place on sled
  - g. Place front plate on runners
  - h. Trim rails
  - i. Complete brush bow
  - j. Rig brakes
  - k. Oil sled
  - l. Install runners (shoes)
  - m. Trim bolts
  - n. Construct tow line

Construct a dog sled

Introduction

Dog mushing is becoming increasingly popular in Alaska. The Iditarod Race has brought the sport of mushing to the world's attention. The true self-sufficient person might be thought of as creating his/her own transportation outside of the cash economy, using dogs. As any musher can relate, dogs cost money. While largely replaced by the snow machine or the ATV, transporting people and goods by dogs is a viable part of Alaska's self-sufficient and subsistence heritage. Also, dogs are more reliable than machines. When a machine breaks down in subzero weather it can be a life-threatening situation.

Overview

Dog mushing is ever-increasing in popularity in the state, with international attention heaped upon dog racing. Not only are some mushers making a living out of sales of dogs, equipment, and prize winnings, but a service industry supplying mushers with harnesses, dog food, and sled parts is growing. Most sleds are hand-built, using some power tools, though one can buy sleds from several suppliers. A new magazine dealing specifically with mushing, has emerged. One source estimated that there are six to ten sled makers working in the state currently. Basket or toboggan-style tow sleds are also in demand.

Suggested Learning Activities

1. Invite someone to class who has built a dogsled or a sled to tow behind a snow machine. Ask this person to talk with you and/or show slides about his/her experiences OR observe someone who is in the process of building a sled. Photograph the person's activities and create a neatly-labelled photo-essay that describes the process.
2. Select materials and build a sled, forming and joining the runners and stanchions; forming and tying the handle bars and cross pieces; steaming the top rail and placing it on the sled; placing the front plate on the runners; trimming the rails; completing the brush bow; rigging the brakes; oiling the sled; installing the runners; trimming the bolts; and constructing the tow line.

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Resources

Alaska Dog Mushers Association, P.O. Box 662, Fairbanks, AK 99707. *Statewide mushers organization.*

Alaska Dog Mushers Museum, P.O. Box 2075, Fairbanks, AK 99707 (907) 457-6874. *Open summers. Has information on mushing, its history and methods.*

Kobuk Fuel & Feed, Box 1599, Fairbanks, AK 99707. (907) 474-9078. *Supplier of mushing materials, dog food, and winter headquarters of Alaska Dog Mushers Association.*

Rae's Harness Shop, 1524 Dowling Road #6, Anchorage, AK 99507. (907) 563-411 or 800-478-2030, Outside 800-544-2262. *Sells harnesses, collars, chains, snaps, dog packs, more.*

Wilderness Ways, P.O. Box 80434, Fairbanks, AK 99708 (907) 455-6224. *Offers a complete line of parts for Tim White™ sleds and QCR runner systems. Also carries fully-made sleds.*

Magazines and Books:

Alaskan's How to Handbook, by Joe Dart, Interior Alaska Trapper's Association, P.O. Box 60418, Fairbanks, Alaska 99706, 1981. *Among the various how tos are articles entitled "George Attla on Bending Wood for Sleds, Bending Sled Runners, Building the Attla Sled, A Trappers Sled, and Tips."*

The Dog in Action by McDowell Lyon, Howell Book House Inc., 230 Park Ave., New York, NY 10169.

Dogs of the North, Alaska Geographic, Volume 14, Number 1, 1987, P.O. Box 93370, Anchorage, AK 99509. *Full of color photos. Available at most Alaskan bookstores.*

"Alaska Feeder," newsletter of Alaska Mill and Feed Company, Fairbanks, AK.

The How Book on Dog Sled Construction and Equipment, by Richard A. Burmeister. *Copies available from the Vocational Education Library, Office of Adult and Vocational Education, P.O. Box F, Juneau, AK 99811. Send $5.00. this book is an excellent guide for the dog sled builder.*

"The Iditarod Runner," Iditarod Trail Committee, Anchorage, Alaska

Mushing Magazine, P.O. Box 149, Ester, AK 99725 (907) 479-0454

The Secrets of Long Distance Training and Racing by Rick Swenson with Steve Chamberlain, L & B Color Printing, Wasilla, AK 99687. *Available from Rae's Harness Shop in Anchorage.*

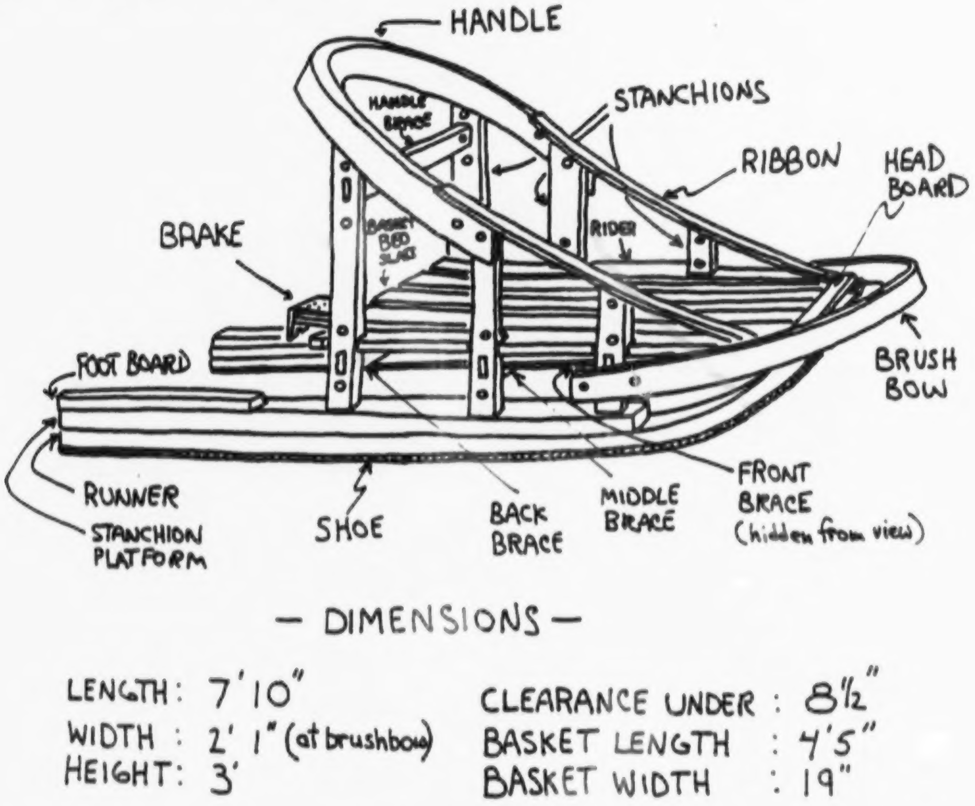
The Yukon Quest dog race publishes an annual booklet .

Sled Construction

How do I construct a sled for a snow machine?

Today's tow sleds are still largely hand-made. Snow machine sleds may either have a basket, making them much like dog sleds, or they can be constructed out of 2 x 4s, as shown in the Alaskans How to Handbook. The preferred wood for sleds is birch or hickory though ash or oak can be used as well.

A quick tow sled can be made of softer wood. The runners will have to be steamed and bent, unless they are constructed of thin strips, laminated, and molded into place.


HANDLE
HANDLE BRACE
STANCHIONS
RIBBON
HEAD BOARD
BRAKE
BASKET BED SLAT
RIDER
FOOT BOARD
BRUSH BOW
RUNNER
STANCHION PLATFORM
SHOE
BACK BRACE
MIDDLE BRACE
FRONT BRACE (hidden from view)
— DIMENSIONS —
LENGTH: 7'10"
WIDTH : 2' 1" (at brushbow)
HEIGHT: 3'
CLEARANCE UNDER : 8½"
BASKET LENGTH : 4'5"
BASKET WIDTH : 19"

The anatomy of a sled

How do I construct a dog sled?

According to Richard Burmeister, dog sleds are shorter and lighter than tow sleds with baskets. Today many dog sleds are constructed of manufactured parts such as Tim White™ sled parts. Quality hand-built sleds are also available for under $1,000. Currently some experimenting is taking place with laminated plastic sleds. Dozens of dog sled makers are found throughout the state. The steps in sled making, from picking the wood to bending the wood for the handles to bending the runners, are traced in the books listed above. Runners are steamed or hot water is mopped onto them to assist in bending, or they may be laminated of thin strips, glued, and clamped to a mold. Today's dog sleds use plastic shoes on runners.

Manufacture Crafts for Sale (Traditional Arts)

Basketry
Teacher Page

Competency : **Build baskets**

Tasks:
Sketch out basket before starting
Cure gathered material
Make baskets from material gathered
Decorate baskets
Market products made

Introduction

Basketry is a very labor-intensive endeavor. Like other native crafts in the state, basketry has been relegated to an art. Plastic and other materials may replace traditional baskets for utilitarian use although many Native people are striving to preserve the use of traditional materials such as spruce and alder roots.

Overview

As the "Alaska Career Guide" states, handcrafters "create and manually make a wide range of artistic and practical items for sale. In Alaska, this may include traditional crafts as wood, ivory, and soapstone carving, basketry, and leather work. ...Other tasks include selling the items and doing minor bookkeeping. ..."most are self-employed. Many handcrafts are sold to tourists and success in selling therefore tied to changes in that industry. Tourism is expected to do well in the near future." A gift shop owner in Nome said that she felt that a basket weaver could make a good living–"a hundred dollars a day or more by making baskets for the tourist trade."

Suggested Learning Activities

1. Invite several local basketmakers to class so that you can observe and ask questions as they weave their craft. Find out how they design their baskets, select and prepare their materials, and how they weave and decorate the baskets. Ask them how they market their work.
2. Research the type of baskets found in your area, paying attention to the traditional designs and decorations. Choose one from which you can model a basket of your own.
3. Design your own basket. Gather up your materials and prepare them for weaving. Weave the basket and decorate it as you please.

Resources

Alaska Indian Arts, Box 271, Haines, Alaska 99827. *This non-profit groups specializes in wood products, including totems, masks, paddles, soapberry spoons etc., recreating historic designs.*

Alaska Native Arts and Crafts Association, 333 W. Fourth Avenue, Anchorage, AK 99501. *A non-profit organization which buys and retails a variety of Native handcrafts, including soapstone, carvings, baskets, masks, silver work, and skin sewing. The organization makes two buying trips to rural areas annually to buy. Some items are mailed direct to this organization for pricing. Over 50 years in existence.*

Alaska State Council on the Arts, 619 Warehouse Ave., Suite 220, Anchorage, AK 99501. (907) 279-1558. *This agency annually provides over 90 apprenticeships for those interested in studying with master craftspersons in the state.*

Institute of Alaska Native Arts (IANA), P.O. Box 80583, Fairbanks, AK 99708. *This non-profit program and service organization supports Aleut, Eskimo and Indian artist with workshops, symposiums, exhibits and a bimonthly newsletter. The agency houses files of master craftspersons for those interested in apprenticeships. The newsletter includes interviews with Alaska Native artists. A recent traveling exhibit featured mukluks, dolls, masks, baskets, beadwork, skin sewing and Chilkat weaving.*

Books:

Alaska Native Arts and Crafts, Alaska Geographic Society, 137 East Seventh Avenue, Anchorage, AK 99501 (907) 563-5100

"Aleut Basket Weaving," by Kathy Lynch, Adult Literacy Laboratory, University of Alaska Anchorage, February, 1977. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

"American Indian Art Magazine," 7314 East Osborn Dr., Scottsdale, AZ 85251. (602) 994-5445

Eskimo Artifacts Designed for Use, Paul and Mary Thiry, Salisbury Press, Superior Publishing, Seattle, 1977.

The Guide to Self-Sufficiency, John Seymour, Hearst Books, New York, 1976. *A useful general guide, generally aimed at back-to-land lifestyles in the Lower 48.*

Spruce Root Basketry of the Alaska Tlingit, Frances Paul, Education Division, United States Indian Service, 1944.

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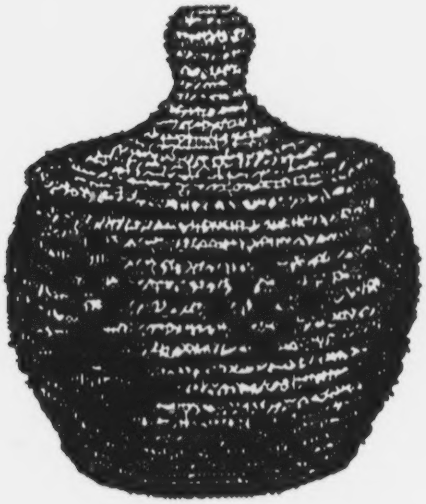
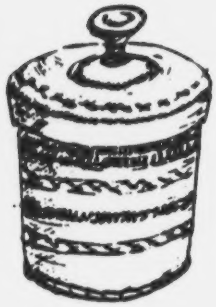
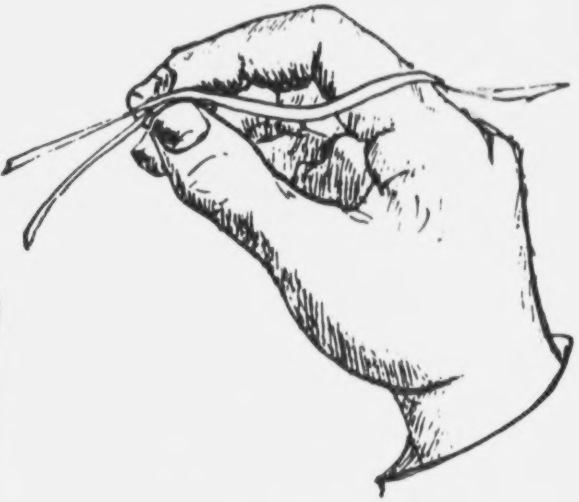
Basketry

Do I sketch out the basket before starting?

Although the basketmaker may sketch the general shape and dimensions of the basket, basketmaking is a traditional art. The beginning basketmaker may work with another basketmaker, following his/her designs and advice, or s/he may use designs from books. Eventually, the basketmaker may deviate from the original form and method reflecting an individual style through the traditional art.







How do I select and cure the gathered material?

A basket-weaver from Hoonah gathers spruce roots from the Sitka spruce. Younger and tougher spruce roots are selected. The best roots come from the mature tree, say one to two feet in diameter. The second grade of roots come from smaller diameter trees, one foot or less in diameter. The third grade comes from immature trees. For the colored grasses, she uses different colored grasses from open meadows.

Historic Aleut baskets were woven so tightly that they looked like cloth. As Kathy Lynch notes in "Aleut Basket Weaving, today "the baskets are usually small and cylindrical–about 3 inches high by 2 inches in diameter…with a woven knobbed lid." The baskets were made of rye grass *(elymus mollis)*. As Kathy continues, "when the grass was used right away, only the lower blades of grass would be used. These were already bleached from lack of sunlight. It was also possible to bleach grass by putting it into a gunny sack covered with moss. The grass would be kept moist with seawater until it was bleached. After being washed and dried, the grass could be stored in bundles for future use." ("Aleut Basket Weaving, pp. 1-5)

The Villages in the area of Nome sold baleen baskets until recent times. Today, these baskets are available in the vicinity of Barrow, though they are rare–and expensive. Some baleen baskets were woven in vocational classes at Nome-Beltz High School under the direction of Harry Koozaata. Selection and preparation of basket-making materials for this class was under the direction of a basketmaker from Point Hope.

Birch baskets of sewn-together bark are found in the St. Michaels and Stebbins area. These baskets are sold in gift shops in many areas of the state.

How do I make baskets from the material gathered?

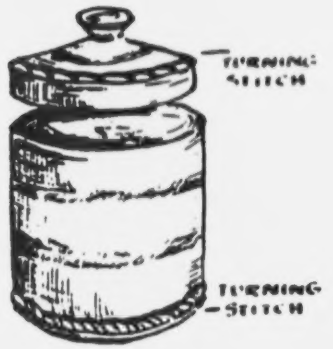
Frances Paul notes that the Tlingit employed several different types of weaving. She noted that "these five techniques do not include the fish trap or the simple checkerboard plaiting of mat-making." She stated that the Tlingits methods "are all twined weaving (as opposed to the coil method used by other Indians and Eskimo), in which a regular series of one or more warp splints are enclosed by a crossed twining of two or more weft strands, the work progressing from left to right." (Spruce Root Basketry of the Alaska Tlingit, p. 22.

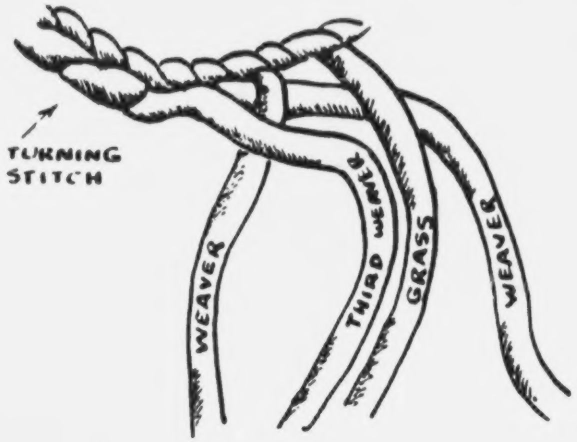
Basketry is a technical art. Around the world, it can be divided into "hard basketry," and "soft basketry." "Hard" baskets are those made of wooden "rods" or "wisps." Such baskets are for personal use, as they differ greatly from the "soft" baskets decorated and sold at a premium. As John Seymour notes in The Guide to Self-Sufficiency, "baskets can be made from reeds, rushes, sedges and grasses. Rushes and sedges are best, being soft and pithy, and very tough and long lasting. They should be cut in midsummer. The best way to cut them is to wade in shallow water pushing a punt, cut the plants as low as possible with a sickle and lay them carefully in the punt so they keep parallel and don't bend. Dry rushes for about three weeks, in the shade if you can because the sun bleaches them which spoils their appearance... To make a basket make a flat coil and when you get to the "chine", or bottom corner, continue the coil up at whatever angle you like until you get to the border..." (The Guide to Self-Sufficiency, p. 220)

How do I decorate the baskets?

Baskets are often decorated with different colored material, such as black-colored grass on light colored or other plants such as the dark undyed stem of the maiden hair fern. Historically spruce root and grass basket designs also contained designs of grasses naturally dyed or bleached. Today, commercial dyes can be used to recreate the same colors. Tlingit baskets have interwoven colors of black, purplish black, red, yellow, or blue-green. Colored thread may also be used to decorate baskets.

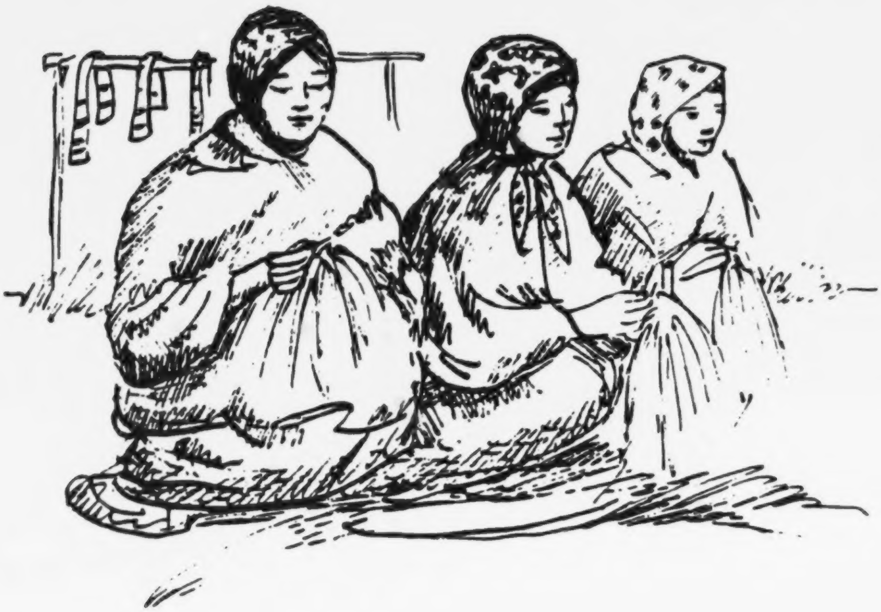
Some Athabascan baskets are decorated with split porcupine quills. In some cases designs had historic meaning to Native people, for example, as Frances Paul notes, the "track" of the woodworm, the "wings" of the butterfly, or the "backbone" of the halibut. (Spruce Root Basketry of the Alaska Tlingit, p. 46)





How do I market my baskets?

The basketmaker from Hoonah markets her baskets and moccasins at the Southeast Alaska State Fair. Such products are found in gift shops in urban areas in the state and some are marketed Outside. Basket weavers may deal directly with shop owners, though some artists cooperatives can be found. In some cases village general stores buy the product and market them for the maker. In most cases, however, the basketmaker will be in direct contact with buyers, either by taking the baskets directly to a gift shop and negotiating a price, or by selling to a buyer who visits the village.



Making Items of Bone or Tusk
Teacher Page

Competency: **Make items of bone or tusk**

Tasks:
Sketch out product before starting
Carve ivory or bone from material gathered
Market products made

Introduction

Recently the Smithsonian Institute gift shop allowed the sales of walrus handicrafts in the gift shop as part of a Native handicrafts exposition. These sales underline the high profile Alaska handicrafts enjoy. One can find items of bone or tusk in gift shops from Barrow to Ketchikan. The popularity of such items points to the continued viability and respect for Native handicrafts.

Overview

Students need to remember that the Marine Mammal Protection Act of 1972 makes it illegal to take a marine mammal or possess any product from such an animal, except by Alaska Natives. Carving on mastodon tusks or fossilized ivory is however, legal for anyone. Non-Natives who are sure of the origin of the ivory or bone they are carving can, depending on talent and experience, make a good living. As the "Alaska Career Guide" states of such carvers, "most are self-employed. Many handcrafts are sold to tourists and success in selling therefore is tied to changes in that industry. Tourism is expected to do well in the near future."

Suggested Learning Activities

1. Invite local ivory carvers to class to demonstrate and discuss their craft.
2. Invite Marine Mammal protection officers to class to discuss the Marine Mammal Protection Act as it applies to ivory items.
3. Study designs of ivory carvings in books on Alaska Native crafts. Make up a checklist to evaluate carvings. What makes a good carving?
4. Visit a local museum or tour gift shops to evaluate carvings, using your checklist. What is the general quality of ivory items on display?
5. Obtain some ivory or bone for carving. Remember that only Native people may use marine mammal products, but mastodon tusks, bone, and fossilized ivory are acceptable for the use of the general public. Sketch out a design for carving or engraving on ivory or bone. Carve the ivory or bone, referring to your sketches.
6. Conduct research to find out how you where you could sell your product, if you decided to do so. Which outlet would be most profitable for you as the seller?
7. After studying pictures of traditional Tlingit and Haida horn ladles, obtain mountain goat horn or clay and carve or sculpt a ladle. Decorate. Fire clay horns in a kiln. Display the products.

Resources

Alaska Indian Arts, Box 271, Haines, Alaska 99827. *This non-profit groups specializes in wood products, including totems, masks, paddles, soapberry spoons etc., recreating historic designs.*

Alaska Native Arts and Crafts Association, 333 W. Fourth Avenue, Anchorage, AK 99501. *A non-profit organization which buys and retails a variety of Native handcrafts, including soapstone, carvings, baskets, masks, silver work, and skin sewing. The organization makes two trips to rural areas annually to buy. Some items are mailed directly to this organization for pricing. Over 50 years in existence.*

Alaska State Council on the Arts, 619 Warehouse Ave., Suite 220, Anchorage, AK 99501. (907) 279-1558. *This agency annually provides over 90 apprenticeships for those interested in studying with master craftspersons in the state.*

Eskimo Walrus Commission, P.O. Box 948, Nome, AK 99762

Harry Koozaata, Nome-Beltz Jr./Sr. High School, Box 131, Nome, AK 99762-0131. (907) 443-5201. *Harry has instructed vocational classes in ivory carving, basket-making, boat building and other self-sufficient operations for years.*

Institute of Alaska Native Arts (IANA), P.O. Box 80583, Fairbanks, AK 99708. *This non-profit program and service organization supports Aleut, Eskimo and Indian artist with workshops, symposiums, exhibits and a bimonthly newsletter. The agency houses files of master craftspersons for those interested in apprenticeships. The newsletter includes interviews with Alaska Native artists. A recent traveling exhibit featured mukluks, dolls, masks, baskets, beadwork, skin sewing and Chilkat weaving.*

Books:

Alaska Native Arts and Crafts, Alaska Geographic Society, 137 East Seventh Avenue, Anchorage, AK 99501 (907) 563-5100

Aleut Art, Lydia T. Black, Aleutian/Pribilof Islands Association, 1689 C St., Anchorage, AK 99501, 1982.

Eskimo Art, Dorothy Jean Ray, University of Washington Press, Seattle and London, 1977

Making Items of Bone or Tusk

Do I need to sketch out the product before starting?

A beginning carver certainly should sketch out the product before starting. That way you are sure that you have a design that you like. It also assures that you don't waste precious bone or tusk on practice carvings. More experienced carvers might create a model, later adapting the carving to highlight characteristics of the ivory or bone. A Southeast Native carver recently related that most experienced carvers just "eyeball their work. They sketch a little on the bone or tusk before starting, then start using their drimmels and bits." Drimmels are small hand-held electric drills.

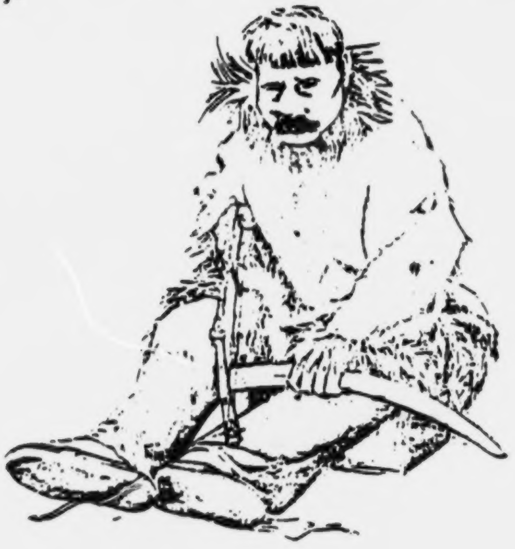
Harry Koozaata of Nome/Beltz High School says that all students in the carving class there are required to sketch out the product on paper and on the object to be carved before starting. As they carve, improvements to be made on the work being carved material are first made in color on the paper or cardboard.

How about tips on carving ivory or bone from material gathered?

The Marine Mammal Protection Act of 1972 makes it illegal to take a marine mammal or possess any product from such an animal, except by Alaska Natives. Marine mammal products such as ivory cannot be transferred to non-Natives unless they are first turned into Native crafts. Carving on mastodon tusks or fossilized ivory is, however, legal for anyone. Non-Natives need to make sure of the origin of the ivory or bone they are carving to abide by the law. These laws are enforced and carry stiff penalties.

For those eligible to carve in ivory, Alaska Native Arts and Crafts states, "The availability of fresh [walrus] ivory on a year-to-year basis is unpredictable. If ice conditions are wrong or the migration of walrus follows a slightly different route, little fresh meat and ivory may be obtained, and whole villages may do without.

"Men who were unsuccessful in the hunt, or female carvers (who do not hunt) must buy, trade or borrow ivory from friends and relatives. Additionally, walrus ivory must be seasoned to minimize cracks and breakage. A conscientious carver will not work with 'green' ivory, and many carvers strive to build up a stock of seasoned material to work with in the future. Opinions differ among carvers as to how long ivory should be seasoned. Lincoln Milligrock of Nome sets his aside for a year or more, but most carvers wait only a few months before using their ivory.

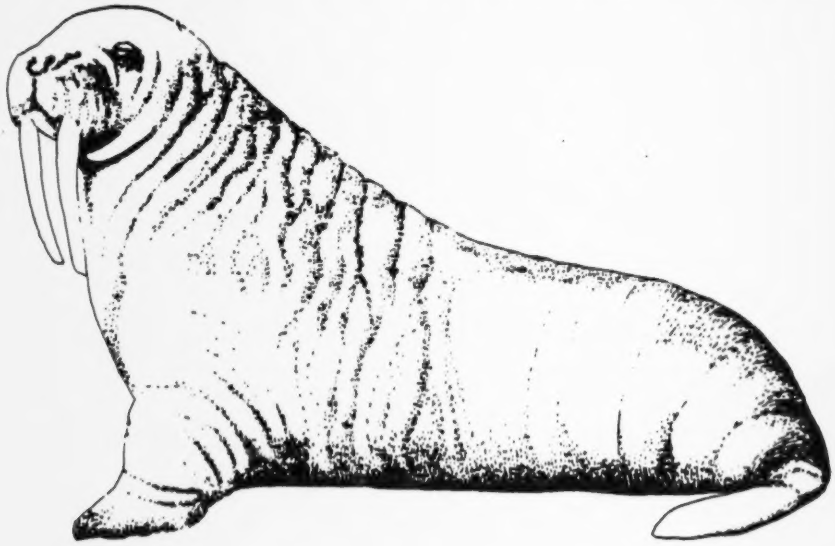


"The present-day trade in old walrus ivory, often mistakenly called fossil ivory, is brisk and lucrative. This ivory has been buried in the ground or has been on beaches for years, and contact with various minerals has caused it to change from white to tan or any of a multitude of colors. Some highly prized old ivory exhibits rays of deep blue or areas of brown and gold which shine like the semiprecious stone, tiger's eye.

"Most old ivory comes from ancient sites or beaches on Saint Lawrence Island and is sold by the pound to non-native buyers, generally for use in some kind of artwork. Various federal prohibitions govern the collection of old walrus, mammoth and mastodon ivory. Such materials may be gathered from private or reservation lands, but may not be traded or sold if found on public lands according to the Antiquities Act of 1906 and the Archaeological Resources Protection Act.

"Many carvers in Savoonga, on Saint Lawrence Island, use old ivory for their own work. They have access to literally tons of material, but for most Eskimo carvers old ivory is prized and difficult to obtain. Carvers from Little Diomede and Shishmaref who craft delicate jewelry need old ivory for the alternating links of bracelets they make. Some of the old ivory they use is dug up or found, but much is traded for or purchased with cash from islanders at even higher prices than traders must pay because of competition between carvers and villages.

"Eskimo carvers generally prefer walrus ivory, either fresh or old. A cross section of walrus tusk ivory shows three distinct layers. Outside is a thin husk which is generally cracked and discolored on male tusks. The inner portion consists of a mottled, almost marbleized dentine core which is often used to aesthetic advantage on carved sculptures and figurines. The layer between these two is smooth, opaque ivory, sometimes a delicate rose color on female tusks. Walrus teeth, which are also ivory and are sometimes fairly large, are used for small carvings.



"Carvers work with a number of tools–heirlooms, handmade and modified commercial tools. These include hacksaws, coping saws, vises, several sizes of files, bleached sealskin thimbles for protection during filing, scrapers and assorted gravers. Two aboriginal tools still in use include the adz and the bow drill. Carving tools are generally stored in commercial toolboxes, but a few artists are fortunate enough to have worn bentwood boxes with ivory handles or inlay, which have been passed down to them through the men of their families.

"Machine tools are also common among carvers today. The lathe shapes ivory beads and motorized tools assist some artists in many stages of the carving process. The rough, etched fur on many carved bears and the geometric nicks which sometimes represent stylized feathers on birds are two examples of the work of machine tools.

"Simply, the carving of most figurines progresses as follows: first, the husk is trimmed from the raw ivory tusk with an adz; then the tusk is divided into square and rectangular pieces which approximate the sizes of the objects to be made. A quick pencil sketch is made on the chunk to be carved, and a rough form is fashioned with a hacksaw. A coping saw further refines this crude form into its intended shape.

"Files of increasing fineness are used to reveal the final human or animal figure. Features such as eyes, ears or mouth are cut out with a graver; eyes are often filled with a material of contrasting color such as old ivory or baleen. At this state, file marks are smoothed out with sandpaper, and metal polish, combined with strenuous rubbing, perfects the surface. India ink, graphite, hematite or commercial coloring may be added in the final stages.

"If the ivory is to be engraved, and the King Islanders are masters of this technique, gravers of assorted widths are used. The carver literally walks the tool over the polished ivory surface, creating a zig-zag pattern. India ink or some other darkening agent is then applied to the entire surface, where it settles in the recessed grooves and leaves the desired pattern after the surface is wiped clean. Carver Floyd Kingeekuk of Savoonga uses a slightly different method to create the realistic seals for which he has become famous. Kingeekuk blackens the entire seal, then etches through the black surface (which makes it easier for him to see the fine pattern) with fine dental tools and finally removes the black and re-applies color only in the grooves. Using this method he is able to simulate not only the major characteristics of the animal, such as rings or ribbons, but literally to highlight each hair." (Alaska Native Arts and Crafts, pp. 56-58)

How do I market my products?

As the Alaska Geographic notes, "In the past, the Alaska Native Arts and Crafts clearinghouse in Juneau would receive large boxes and sacks chock full of carved ivory on a regular basis from native stores in Gambell, Savoonga, Little Diomede and other villages. Prices were often very low, and the work of good carvers did not seem to sell for much more than the poorer quality pieces. Now, extensive travel on the part of most villagers, bringing with it a competitive broadening of the marketplace, and the fact that many carvers have developed individual reputations, has changed this clearinghouse approach forever." (Alaska Native Arts and Crafts, p. 63)

Alaska native carving is growing in demand. Commonly found in gift shops around the state, the Smithsonian Institute recently lifted a ban on sales of walrus ivory products at the Institute's gift shop. A gift shop owner in Nome related that some attempts to organize cooperatives have taken place, but that many of the carvers, skin sewers and basket makers either sell directly to the gift shops or to buyers from Anchorage and Fairbanks who frequently pass through. A good place for first-time sellers is the Alaska Native Arts and Crafts Association in Anchorage. They buy crafts and make a twice-yearly trip to rural villages throughout the state.

Making Items of Fur and Skin
Teacher Page

Competency: **Make items of fur and skin**

Tasks:
Explain how to select skins
Prepare hides
Complete patterns
Sew product
Decorate product
Make masks
Sew mukluks
Sew moccasins
Sew parkas
Carve and decorate dolls
Market products made

Introduction

Ask anyone who works in the tourist industry what is one of the more common things which tourists ask about, and they'll tell you furs and skins. True, there's a national and international controversy as to the use of furs for clothing and the use of the leg-hold trap, but the fur industry continues. Eskimo masks of Anaktuvuk Pass, the headdresses of the Tlingit people and ruffs for parkas are all examples of fur and skin crafts that continue to be a part of the self-sufficient lifestyle in Alaska.

Overview

As Alaska's tourism industry increases, the demand for hand-made Alaskan items is on the increase. Witness the niche for Eskimo masks supplied by the village of Anaktuvuk Pass, or the industry for fur products. Though working and tanning furs is an involved process handcrafting adds considerable value to products. Self-sufficient employment constructing these handicrafts will continue.

Suggested Learning Activities

1. Invite local fur and skin sewers (if possible, invite people who sew a variety of products: masks, parkas, mukluks, etc.) to class to discuss how and from what sources their materials are selected, how to prepare hides and make patterns, how to sew and decorate the products, and how to market them.
2. Obtain furs or skins to use in the sewing of your own product. Sketch out your design, prepare a paper pattern, sew, and decorate your item, using tips learned from local craftspeople .
3. Conduct research to find out how you where you could sell your product, if you decided to do so. Which outlet would be most profitable for you as the seller?

Resources

Alaska Indian Arts, Box 271, Haines, Alaska 99827. *This non-profit groups specializes in wood products, including totem poles, masks, paddles, soapberry spoons etc., recreating historic designs.*

Alaska Native Arts and Crafts Association, 333 W. Fourth Avenue, Anchorage, AK 99501. *A non-profit organization which buys and retails a variety of Native handcrafts, including soapstone, carvings, baskets, masks, silver work, and skin sewing. The organization makes two trips to rural areas annually to buy. Some items are mailed direct to this organization for pricing. Over 50 years in existence.*

Alaska State Council on the Arts, 619 Warehouse Ave., Suite 220, Anchorage, AK 99501. (907) 279-1558. *This agency annually provides over 90 apprenticeships for those interested in studying with master craftspersons in the state.*

Institute of Alaska Native Arts (IANA), P.O. Box 80583, Fairbanks, AK 99708. *This non-profit program and service organization supports Aleut, Eskimo and Indian artist with workshops, symposiums, exhibits and a bimonthly newsletter. The agency houses files of master craftspersons for those interested in apprenticeships. The newsletter includes interviews with Alaska Native artists. A recent traveling exhibit featured mukluks, dolls, masks, baskets, beadwork, skin sewing and Chilkat weaving.*

Yukon Flats Fur Cooperative, P.O. Box 126, Fort Yukon, AK 99740 (907) 662-2587 or 662-2581—*Model program of Athabascan Indians working together to market their own furs.*

Books, Pamphlets and Videos:

Alaska Native Arts and Crafts, Alaska Geographic Society, 137 East Seventh Avenue, Anchorage, AK 99501 (907) 563-5100

"The Cloth Parka," Cooperative Extension Service, University of Alaska and U.S.D.A., Publication No. 72, Reprint December, 1975. *A complete how-to on cloth parka construction.*

Eskimo Masks: Art and Ceremony, Dorothy Jean Ray and Alfred A. Blaker, University of Washington Press, Seattle and London, 1967.

"Eyes of the Spirit," 30 minute VHS video, 1983. *Available through the Alaska State Film Library or from KYUK Video Productions, Pouch 468, Bethel, AK 99559 (907) 543-3131. Documents the creation of three masks designed by Yup'ik Eskimo master carvers and their apprentices.*

Ethel Washington: The Life and Times of an Eskimo Doll Maker, Basil C. Hedrick & Susan Pichel-Hedrick, Alaska Historical Commission Studies in History, No. 31, 1983.

"Fur Parka," Cooperative Extension Service, University of Alaska and U.S.D.A., Publication No. 71, Reprint August, 1978. *A complete how-to on fur parka construction.*

Secrets of Eskimo Skin Sewing, Edna Wilder, Alaska Northwest Publishing Company, Box AA88, 130 Second Avenue South, Edmonds, WA 98020

Skin Sewing for Clothing in Akula, Alaska Historical Commission Studies in History, No. 22. Office of History and Archaeology, P.O. Box 107001, Anchorage, AK 99510-7001. *This publication includes methods to catch fur-bearing animals, traditional ways to prepare a skin for use, and how-tos for creating a variety of skin products.*

Making Items of Fur and Skin

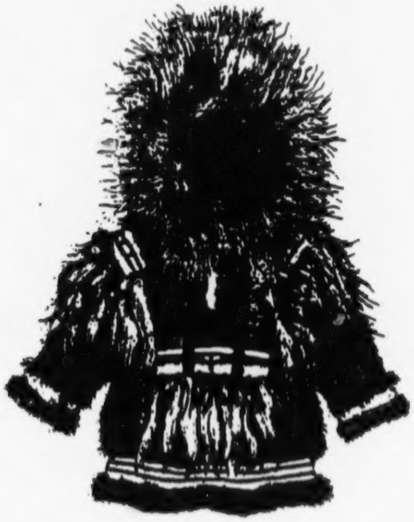
How do I select skins?

As Alaska Native Arts and Crafts states, "[Eskimo] sewers place great importance on the use of specific materials, some of which are only available seasonally. For instance, winter-bleached sealskin can only be tanned during certain seasons. Animals like the Arctic ground squirrel must be trapped or hunted at particular times. Government regulations now restrict the use of some traditional materials such as bird skins. Blood, alder bark and red ochre are used for coloring on garments and footgear.

"Skins commonly used [by Eskimos] for making parkas and mukluks include seal, reindeer, caribou and polar bear. Wolf and wolverine are prized for ruffs. On Saint Lawrence Island, bird skins were often used for parkas. Yupik Eskimos also used bird and fish skins for making parkas.

How do I prepare the hides?

As an Eskimo woman from Teller relates, "mukluks may be made of sealskin or caribou hide. First you must clean the skin, stretch it, and wash it so that it doesn't smell. You stretch it on a board with nails. You use soap and water--that makes it soft. You make it damp, not soaking wet. The soap helps break down the fat and such. Then scrape it. Then you scrape that skin, then wet it again. Then you work on it. Work it with your hands, stretching it, then dry it stretched. "



How do I complete patterns?

The Eskimo woman from Teller says "you have to make patterns out of paper. You have to make the bottoms. The bottoms are hard to get today. You make the bottoms out of bearded seal. To make mukluks you need an Eskimo teacher. But you need to make a pattern for whatever you make."

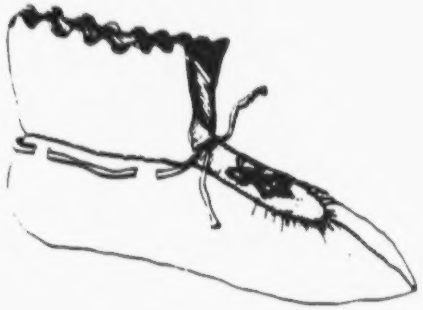
How do I sew the product?

As noted in the Alaska Geographic, "most [Eskimo] sewers prefer sinew thread although in some areas sinew cannot be obtained and waxed thread or dental floss is substituted. " The magazine continues, some fancy parkas are "elaborately ornamented with pieced calfskin trim cut in geometric patterns, strips or dangles of wolverine fur, yarn tassels and bead work." (Alaska Native Arts and Crafts, pp. 67-71)

The Eskimo woman from Teller relates that very few people use sinew today. She said that though some people unravel dental floss and mix it with sinew, most of those who sew in Teller use nylon thread "from the store." For skin sewing, a three-sided needle is used. You'll need a thimble. In the olden days, thimbles were made of walrus hide or bearded seal because they are tough.

How do I decorate the product?

Make a pattern first. Sketch out the decoration you will use on the product. You write down on paper exactly what you want. Some villages offer decorative calfskin in the stores. You may want to decorate with fur of different colors or of different types, sewn on the fur item or with beadwork. Some furs are dyed, though the self-sufficient skin sewer may choose to keep the fur its natural color.



How are masks made?

As Alaska Native Arts and Crafts states, "Anaktuvuk-style caribou [Eskimo] skin masks represent an unusual innovation in skin sewing. The masks began as a variation on Halloween masks, created by two Eskimo trappers from Anaktuvuk Pass in the early 1950s. The earliest masks were carved from wood, but caribou skin stretched and dried over a wooden facial mold with pieced and sewn ruff and features soon became a more popular, time-saving method of production. Both women and men make the masks, and at least one woman has expanded the concept to include large dolls with mask-like faces. Making masks became the primary economic activity in Anaktuvuk Pass for some time after their invention, but access to local construction jobs and a scarcity of caribou hides have slowed production of these masks." (Alaska Native Arts and Crafts, p. 71)

Some Bering and Chukchi Sea carvers create masks of whale bone. Others create masks of bone, wood, and some are made of dried walrus skins. These traditional masks can be used in dance rituals. They are also for sale in gift shops in Nome and elsewhere.

How do I sew mukluks?

As the Alaska Geographic continues, "good footgear is critical in ensuring the safety of a [Eskimo] hunter or traveler in the North, and most regions mukluk style and material vary with changes in season and weather conditions. Mukluks and boots, ranging from ankle to hip-length, reflect the region where they were made as well as their specific use. Women of Shishmaref and Brevig Mission now make mukluks of reindeer-leg skins (silvery-white is the most sought-after color) with wide panels of multicolored bead work at the top. These mukluks advertise the skill of their makers and the villages where they were made. Residents of Hooper Bay, Nelson Island and other areas once sewed or carved family insignias or marks of ownership on clothing, tools and household items." (Alaska Native Arts and Crafts, p. 68)

Today in many places, nylon thread is used. Though sinew was the preferred thread for sewing in the past, extracting the sinew from butchered reindeer and caribou is time-consuming and difficult. Sinew is difficult to find.

How do I sew moccasins?

Moccasins are traditional footwear in several places in the state. Visit state fairs, gift shops, general stores or villages throughout the state, and quality items can be seen. Along the coast the best moccasins are those made of sealskin with trim. In the interior they will most probably be made of moosehide.

A moccasin maker from Hoonah recently related some of the challenges of her craft: "These moccasins have sealskin bottoms. A relative gives me the sealskins. We skin the seal, dry the skin, and send the seal skin to Anchorage to be tanned. We eat the seal meat and the fat. Sometimes I use deerskin for the moccasins. I buy my thread from Whitehorse–it is moose sinew. Costs fifteen dollars a spool. To make the moccasins, all I need is a trace of the foot–the foot size. The beads I use come from New York. I order them. For the beads I use nylon and cotton thread. The moccasins have a thick felt lining inside. Out of one sealskin I can make two pair of moccasins, three pair if they are very small."

How do I sew parkas?

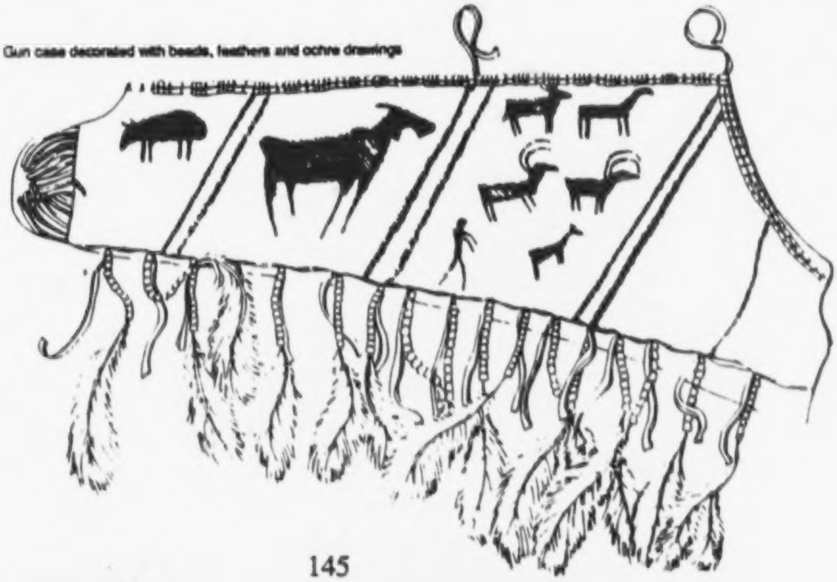
Some parkas are made of cloth, some are made of fur. The cloth parkas are generally worn in the summer, something like a jacket. The distinctive Eskimo cloth parkas seen in many areas of the state are usually made of commercial cloth and are hand or machine sewn. The fur parkas, the traditional winter garment, can be made of sealskin, reindeer and/or the furs of many smaller animals such as squirrels and marten.

For thread, Eskimos traditionally used reindeer or caribou sinew. Reindeer or caribou sinew is tougher than nylon thread if dried right. Plus, sinew has a little "give" which allows it to be pulled very tightly, especially when wet. Sometimes people today mix reindeer sinew with dental floss, unraveling the floss, then twisting it around the reindeer sinew.

How do I carve and decorate dolls?

Traditional dolls are made of skins. As the Alaska Geographic states, "doll making, an Eskimo art form at least 2,000 years old, is often the shared activity of men and women. Dolls were probably originally made for play, a means of allowing Eskimo girls to acquaint themselves with adult lifestyles–'playing house' is the term used in Western culture. Yupik lore today tells of past taboos on how and when young girls were allowed to play with their dolls." (Alaska Native Arts and Crafts, p. 71) Some Eskimo dolls are made of wire, cloth and wood. They may have fur trim or may hold fur dance fans. Some of the dolls may hold drums or harpoons. They may have ivory decorations. Their cloth clothing is sometimes decorated with beadwork.

Gun case decorated with beads, feathers and ochre drawings



How do I market the products made?

In some villages masks are marketed at the village corporation store. Others village craftspersons sell their masks, parkas, mukluks, or moccasins directly to consumers. In other cases, the village corporation purchases the masks and markets them. Many custom parkas are specially made on request. Items are often sold directly to the gift shops in larger towns or cities. A good place for first-time sellers is the Alaska Native Arts and Crafts Association in Anchorage. They buy crafts and make a twice-yearly buying trip to rural villages throughout the state.

Making Items of Wood

Teacher Page

Competency: **Make items of wood**

Tasks:
Carve totems
Market products made
Compare traditional versus contemporary means of product exchange

Introduction

Making "traditional" items or replicas out of wood is an art. Like other areas of art, such endeavors can have more than just monetary value to the artisan. Such arts serve to maintain and strengthen culture as well. Markets for the products have evolved, not only with the interest in Alaskan Native art, but with the tourist boom in the state.

Overview

Native arts and crafts outlets have sprung up in virtually every large Alaskan town and city. Replicas of Native art have appeared from as far away as the Orient. The market for original, authentic Alaskan arts and crafts is expanding. Those with ability, know-how and business sense will be able to sell their products. A carver in Haines related that "three or four" carvers there were making a living carving totem poles, hats, paddles, masks, and other items. Totem poles are commanding $600 a foot or more. It is estimated that 30 or more people in Southeast Alaska are making their living from wood carving.

Suggested Learning Activities

1. Visit a carver of totem poles, hats, paddles, masks, or other wooden items to observe the carving and decorating process. Take notes describing your observations of the artist's design process, tools, and carving technique.
2. Visit as many large totem poles as possible in your community. Photograph and study the designs and colors used. Research local traditional designs and compare the designs you observed in your study.
3. Tour local museums and Native galleries, taking special note of wooden carved artifacts and carving tools. Take notes for future reference.
4. Sketch out a design of a traditional Alaska Native artifact that you can carve from wood. Obtain the wood and make or buy tools. Transfer your sketch onto the wood and carve out your product. Finish by applying paint, shell, or other decorative touches.
5. Think about your own values. Is it better to create traditional artifacts solely for one's family and friends or to create artifacts to sell? What is the cost to the Native culture by either action?
6. Contact the Alaska State Museum to obtain circulating multi-media kits and publications on Tlingit bentwood boxes, Northwest Coast art, and totem poles. Kits contain a variety of hands-on materials and activities suitable for all grade levels.

Resources

Alaska Indian Arts, Box 271, Haines, Alaska 99827. *This non-profit groups specializes in wood products, including totems, masks, paddles, soapberry spoons etc., recreating historic designs.*

Alaska Native Arts and Crafts Association, 333 W. Fourth Avenue, Anchorage, AK 99501. *A non-profit organization which buys and retails a variety of Native handcrafts, including soapstone, carvings, baskets, masks, silver work, and skin sewing. The organization makes two trips to rural areas annually to buy. Some items are mailed direct to this organization for pricing. Over 50 years in existence.*

Alaska State Council on the Arts, 619 Warehouse Ave., Suite 220, Anchorage, AK 99501. (907) 279-1558. *This agency annually provides over 90 apprenticeships for those interested in studying with master craftspersons in the state.*

Alaska State Museum, 395 Whittier Street, Juneau, Ak. 99801. *Excellent multi-media kits and publications available on a variety of topics , with materials and activities suitable for all grade levels. 465-2901.*

Institute of Alaska Native Arts (IANA), P.O. Box 80583, Fairbanks, AK 99708. *This non-profit program and service organization supports Aleut, Eskimo and Indian artist with workshops, symposiums, exhibits and a bimonthly newsletter. The agency houses files of master craftspersons for those interested in apprenticeships. The newsletter includes interviews with Alaska Native artists. A recent traveling exhibit featured mukluks, dolls, masks, baskets, beadwork, skin sewing and Chilkat weaving.*

Totem Heritage Center, Box 7202, Ketchikan, AK 99901. (907) 225-8256. *About 25 people, Indians and others, are studying traditional carving at the center, a city-run museum established to preserve old totem poles.*

Books:

Alaska Native Arts and Crafts, Alaska Geographic Society, 137 East Seventh Avenue, Anchorage, AK 99501 (907) 563-5100

From the Land of the Totem Poles, The Northwest Coast Indian Art Collection at the American Museum of Natural History, Aldona Jonaitis, University of Washington Press, Seattle, WA, 1988. *The catalog of the American Museum of Natural History is integral to many wood carvers.*

Nick Charles: Worker in Wood. The Artist Behind the Work, Oral History Project, University of Alaska, Fairbanks, 1983

Native Arts of the Pacific Northwest, From the Rasmussen Collection of the Portland Art Museum, Stanford University Press, 1954. *The Portland Art Museum's catalog is an important resource for wood carvers.*

Northwest Coast Indian Art, Bill Holm, University of Washington Press, Seattle and London, 1985. *An important work for carvers of Tlingit and Haida art.*

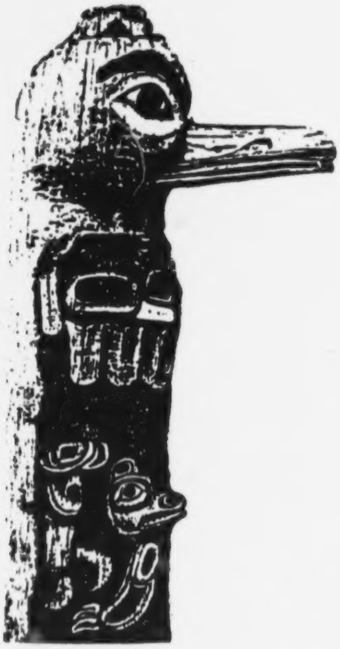
The Totem Poles of Skedans, John and Caroln Smyly, University of Washington Press, Seattle, 1973. Printed by Fleming-Review Printing Ltd., 921 Yates St., Victoria, BC Canada.

Making Items of Wood

How do I carve totems?

Totem poles are an advanced art form. As noted in the Alaska Almanac, "In the early days of southeastern Alaska and British Columbia, the way of life of the Indian people living there was based on the rich natural resources of the land, on respect for all living things and on a unique and complex social structure. The totemic art of the Indians reflects this rich culture. Totems are bold statements making public records of the lives and history of the people who had them carved and represent pride in clans and ancestors.

"Totems, carved from yellow cedar, are a traditional art form among the Indians of British Columbia and southeastern Alaska. Although most well-known totems are tall and free standing, totemic art also was applied to houseposts and short entrance poles. The carved monuments were erected by the leading clans in each tribe in memory of their chiefs who had died. The poles also symbolized power and prestige.



"Animals of the region are most often represented on the poles. Of all the crests, the frog appears most frequently, then the bear, eagle, raven, thunderbird, wolf, owl, grouse, starfish, finback whale and halibut. Also represented are figures from Indian mythology: monsters with animal features, humanlike spirits and semi-historical ancestors. Occasionally depicted are objects, devices, masks and charms, and most rarely, art illustrating plants and sky phenomena.

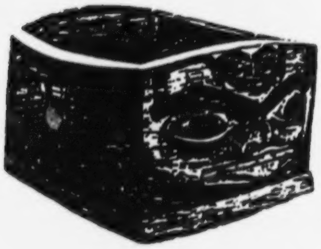
"The poles are traditionally painted with pigments made of soil of yellow, brown and red hues, coal, cinnabar, berry juice and spruce sap. Fungus found on hemlock produces various colors: yellow when decayed, red when roasted and black when charred. Before modern paints became available, salmon eggs chewed with cedar bark formed the case, or glue, for the paint.

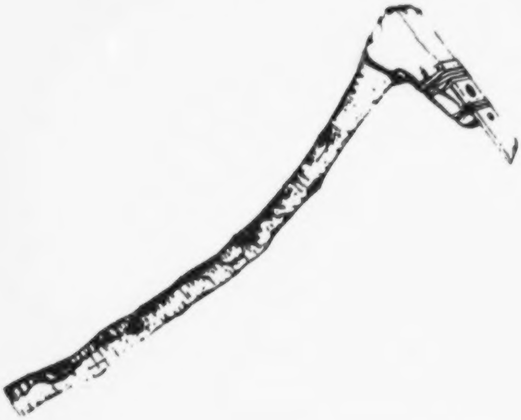
"Totem art reached its peak after 1830, with the introduction of steel European tools acquired through fur trade, and endured to about 1890. Carving activity has not been as plentiful since. Leading families competed with others, building larger and more elaborate totem poles to show their wealth and prestige.

"The pole was left to stand as long as nature would permit, usually no more than 40 to 50 years. Once a pole became so rotten that it fell, it was pushed aside, left to decay naturally or used for firewood. Most totem poles still standing in parks today are 40 to 50 years old. Heavy precipitation and acid musket soils hasten decomposition." (Alaska Almanac, pp. 229-230)

A carver in Haines related that he refers to totem poles pictured in museum collections catalogs, especially the Portland Art Museum catalog and the catalog of the American Museum of Natural History in New York City. From those gathered ideas, he makes rough sketches and transfers them to the wood. This carver uses red cedar from Long Island, near Ketchikan. He says that green wood is better because it is more brittle. For tools, he makes his own adzes and knives from files, wood, and nylon cord.

For masks the carvers may use dried pigments–historic dyes, but for totems they use modern paints. For blue, they use copper carbonate, for black, graphite, and for red, cadmium.





How do I market the products made?

Though some market exists for huge totem poles, not only in villages, but for Native corporation headquarters and other buildings, it is usually the smaller items which are sold. Crafts areas such as the workshop at Sitka National Historical Park allow a place for Native craftspersons to work and market their products. Finer shops in large Alaskan towns and cities will carry wooden products such as masks, paddles, seal clubs, fish clubs, soapberry spoons or wooden ladles. Some of the masks are decorated with feathers and quills. Some carvers display their work at Southeast's State Fair. Totems and other wood objects are sold in gift shops or non-profit artists studios such as Alaska Indian Arts in Haines or Sitka National Historic Park in Sitka. Carvers may market their products directly to such art stores. Totems today grace businesses in Alaska and the Lower 48. Such artists' studios and coops help the artist gain exposure and sales for their wood products.

How do traditional means of product exchange compare with contemporary means?

Most of Alaska today has entered into the cash economy. Even in the most rural places, products are bought and sold. Traditionally products may have been bartered or exchanged, without money changing hands. In some places, those who have always made products for family members, are being offered money for items. The choices one makes at such a time involve personal values. Some people find creating traditional items for sale distasteful; others see doing so as simply another step in the evolution of a people. Whatever the case, Alaska Native art is seeing a resurgence.

Other items of wood include furniture, boats, and cabinets. Skills involved in this area of working with wood can of course be considered part of the self-sufficient lifestyle. Such skills, however, belong in the woodworking, building construction, or industrial education class.

Use Skills and Equipment for Self-Sufficiency

Wilderness Survival Techniques
Teacher Page

Competency: **Use wilderness survival techniques**

Tasks:

Carry a survival kit
Build an outdoor shelter
Build a fire from scarce materials
Recognize and obtain wild foods by:
    a. making a snare
    b. making a spear
    c. identifying and gathering edible wild plants
Construct a signaling device
Explain the importance of a positive attitude in wilderness survival
Make snowshoes
Identify symptoms of and treatment for hypothermia

Introduction

In Alaska wilderness survival skills are vital. With few roads and long distances between villages, self-sufficiency endeavors in remote areas are subject to arduous climatic conditions and accidents. The elements are a major cause of death in the state. Preparation for wilderness in terms of equipment may involves foresight. Basic skills in finding food and shelter, practicing first aid, and being able to signal for help may make the difference between life and death.

Overview

Though many Alaskans grow up around wild areas, just living there doesn't necessarily mean your wilderness survival skills are top-notch. Many people in rural areas depend on the cash economy for their basic needs. Survival skills can apply to anyone who lives the self-sufficient lifestyle: the hunter, the gatherer, the fisher and the outdoor recreation user. Alaska's harsh climate, rugged geography and inviting remote areas can be hazardous to the unprepared. Accidents (including exposure or hypothermia) are a leading cause of death in the state. Not only are wilderness survival skills important to self-sufficient lifestyles, but some jobs in the cash economy call for these skills.

Suggested Learning Activities

1. View the U.S. Coast Guard videotape, "Hypothermia."
2. Role play a hypothermia situation in small groups where one or two people act as hypothermia victims and one or two others provide care.
3. Invite a backcountry ranger to class to discuss experiences with hypothermia victims.
4. Take an overnight field trip where, after watching an expert demonstrate the construction of a lean-to or other primitive structure, you construct your own shelter.
5. Build a fire where you are camping out using waterproof matches and available materials.
6. Use tree boughs and cord to construct crude snowshoes. Tie them onto your feet and try them out in the snow!
7. Role play a situation in which you are stranded far away from people. Demonstrate methods of signalling aircraft for your rescue.
8. Read Jack London's short story, "To Build a Fire." How could the man in the story have changed the outcome?
9. Assemble a survival kit.
10. Practice obtaining wild foods using a snare, a spear, and by gathering edible plants.

Resources

Books:

Basic Hunter's Guide, National Rifle Association Sales Department, P.O. Box 96031, Washington, DC 20090-6031. *Quotations used by permission, National Rifle Association.*

"Making Snowshoes," by Kathleen Lynch, Adult Literacy Laboratory, University of Alaska Anchorage, 1974. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

Tom Brown's Field Guide To Living With The Earth ,Tom Brown Jr. with Brandt Morgan, illustrated by Heather Bolyn and Trip Becker, Berkley Trade Publications Edition, New York, Berkley Books,1984.

Tom Brown's Field Guide To Wilderness Survival, Tom Brown Jr. with Brandt Morgan, illustrated by Heather Bolyn ,Tom Brown , Berkley Books, New York,1983 *The authoritative survival guide.*

Wilderness Survival Guide, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020

Wilderness Survival, Government of British Columbia Forest Service, Outdoor Recreation Branch, 1974

Wilderness Survival Techniques

Do I need to carry a survival kit?

Even the best woodsperson may will run into an emergency in the out of doors. Some bush pilots keep a heavy sleeping bag, signalling device, emergency food, and firemaking materials in their plane. A survival kit is a necessity, not an option, in the Alaskan bush. Those familiar with the Alaskan climate carry–even on a hot day–wool, pile or polypropelene clothing. The weather can turn, someone can fall overboard, or other hazardous circumstances can arise.

A small survival kit contains matches in a waterproof container. A plastic film can is good. Another good item to have is a disposable lighter (or several), in a small plastic bag. A pocketknife will come in handy. Needles and thread may prove indispensable. Fishing line, lures, hooks, and ties may help you catch a fish. Wire for snare making will help, and a file, a signalling mirror, flares, some fire tinder in a plastic bag, nails, and ground-to-air signals are useful. Keep your survival kit in your ATV, in your backpack, in your skiff, stored in a strong nylon bag or hard case. That way, you won't have to pack and repack it each time, just grab the bag or box and bring it along. Remember to take extra food.

Courtesy of National Rifle Association

How do I build an outdoor shelter?

As the National Rifle Association notes, "Choose the most protected spot you can find for your shelter site. A cave, rock outcrop or fallen tree will provide shelter for the night. If it isn't sufficiently sheltered, use whatever is at hand to make it better. It is of vital importance to stay warm when lost or stranded. Your shelter should protect you from the wind and cold and keep you dry to prevent loss of body heat. Choose a shelter site that will allow you to locate a fire in front of it.

"Build the best shelter you can. However, do not waste valuable energy needlessly.

"If you are among trees, the quickest and easiest form of shelter is one made from a fallen tree that has ample space between the trunk and the ground. Often all that is necessary is to cut away some of the branches and lean them against the trunk to form a crude type of roof. Be careful not to cut off any of the limbs underneath that may be supporting the tree."

Once have fallen the tree, cut away blocking boughs and those from the top of the tree. These can be used to thatch the roof and ends. Upon completion of the shelter, locate wood and build a fire at the entrance for warmth.

Another easy shelter to build is a lean-to. "A bed made of boughs about eight inches (20 cm.) deep, will provide good insulation from the cold ground. Boughs should be placed in rows with the butt ends toward the ground."

To attach the ridgepole, tie the pole, place it in a tree fork, wedge it with a peg in a tree hole, and place it in the crotch of another pole, or support it with a tripod. Place the ridgepole and framing poles so that the weight is against the tree trunk. The framing poles should be spaced 12" to 18" apart. Start with the largest boughs at the bottom with butt ends up. Thatch boughs to top of framing poles. A bough bed will insulate you from the ground. Boughs should be placed with broken ends toward the ground. For larger fuel, gather dry dead wood. Do not consume energy by cutting it. (Basic Hunter's Guide, pp. 249-250) You can have a large fire in front of the shelter.

How do I build a fire from scarce materials?

As the National Rifle Association says, "Fire is a basic need for survival. With fire, a person can warm him or herself, dry clothing, signal for assistance, cook a meal and enjoy a safe and comfortable night. Fire provides security, comfort and has a way of putting fear and apprehension out of the mind. Always carry the means to light a fire with you when hunting [fishing, gathering or other self-sufficiency activities].

"Long wooden matches of the "strike anywhere" variety, are the most practical matches for lighting fires. A waterproof, unbreakable container will help keep your matches dry.

"A second way to start a fire is with flint and steel. Cold, wet, windy or stormy weather will not affect the use of this fire starter. Hold the flint so that its bottom corner rests against a log. Extend your finger to keep the tinder from spreading. Hold the steel vertical with the 'saw tooth' edge on the flint. With pressure, strike the steel along the flint, having the sparks land on the tinder.

"Before attempting to light a fire, have two kinds of fuel available–tinder and kindling.

"Most fires will not burn without first lighting some easily flammable tinder. In forest areas, you will find tinder readily available. Gather the fine dead twigs from the lower limbs of standing trees or from dry windfalls. They make excellent tinder.

"Thin layers of birch bark torn into shreds is also good tinder. Other material such as dry grass, fur balls found in the nests of mice and birds, shavings, dry leaves, hornet nests and even lint scraped off your clothing with a knife or sharp rock make good tinder.

"For kindling, gather dry, standing, dead wood. Because of its highly flammable resin, the dry wood of most evergreen trees makes good kindling.

"The thicker the logs, the longer they will burn. A large, old tree stump is ideal for an all night fire. The inside of tree trunks and large branches may be dry though the outside bark is wet.

"The location of your fire pit should be carefully selected. Do not build a fire under a tree as the tree could catch fire. The heat of a fire could also melt snow on the tree's branches, soaking the fire and putting it out. If you must build a fire on snow, construct a platform on the snow made of green logs of stones. Avoid using wet porous rocks as they may explode when heated.

"If the ground is dry, scrape away all grass and debris and build the fire on bare dirt to avoid starting a grass or forest fire.

"If possible build the fire against a rock or wall of logs to reflect the heat toward you and your shelter."

When gathering twigs, be selective. Gather very fine dead, dry twigs from the lower limbs of standing evergreen trees. Shelter tinder from rain or snow with your body. Keep your back to the wind. Have additional fuel ready. Hold twigs in hand in upright position. Use two or more wooden matches held together. Hold the matches under the twigs. Do not smother the fire when adding fuel. Keep twigs in your hand until burning readily before putting the fire on the ground. ((Basic Hunter's Guide, pp. 247-248)

How do I get something to eat?

As the National Rifle Association notes, "Food is not an immediate necessity for survival. People in normal health can exist for 30 days or more on their own body fat and water. However, once other survival needs are taken care of, you should spend some time gathering food from the wild to ward off hunger. This activity will also help dispel boredom.

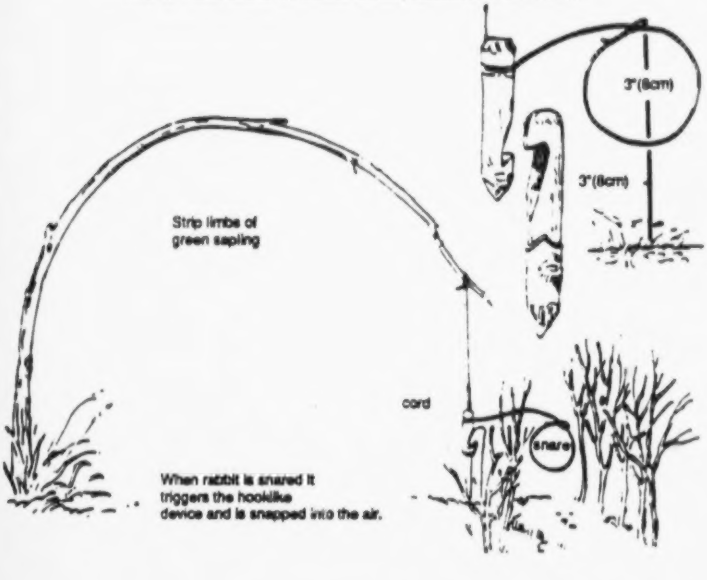
"Many plants native to North America are safe to eat. However, you should learn to identify and avoid the following three types of plants which are poisonous:

a) Water hemlock is a poisonous plant, two to four feet (0.60 m to 1.22m) tall, it is a member of the carrot family and has toothed three-part purple streaked leaves which give off a disagreeable odor when crushed and hollow tuber-like roots which smell like parsnips. Water hemlock is easily confused with cow parsnip.

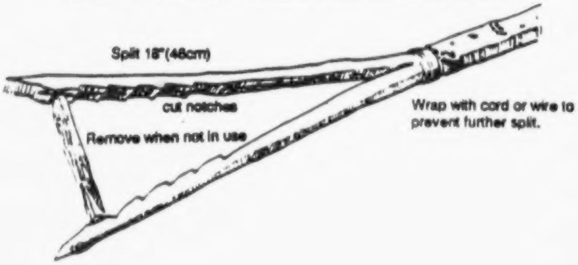
b) Baneberry is a perennial two or three feet (0.60 to 0.91 m)tall. It has small white flowers in a short thick cluster at the top of the stem. Red or white berries replace the flowers in the fall and resemble dolls' eyes in appearance. Avoid all berries growing in clusters.

c) Mushroom of all kinds should be avoided as some kinds are poisonous and they are difficult to identify from those that are edible.

Snap-up Rabbit Snare, reproduced courtesy National Rifle Association


3"(8cm)
3"(8cm)
Strip limbs of green sapling
cord
snare
When rabbit is snared it triggers the hooklike device and is snapped into the air.

Pronged Fish Spear, reprinted courtesy National Rifle Association



"All animals in North America are edible and will provide excellent nourishment. They should be boiled and eaten as a stew or soup to maximize their value as food. You can obtain animals for food by shooting, spearing, snaring, trapping or hooking them. Special skills are required to trap animals and catch fish. Remember, traps, snares and set-lines for fish work for you 24 hours a day whereas hunting does not." (Basic Hunter's Guide, pp. 254-255)

How do I construct a signaling device?

According to the National Rifle Association, "Once your needs for first-aid, fire and shelter have been dealt with, consider how to attract other people's attention to your location. Various types of signals can be used. Although the International Emergency Distress Signal is three signals of any kind (i.e. three shots, three whistle blasts, three fires in a triangle), a single signal is better than none at all.

"To attract searching aircraft, flare signals are best. Flare cartridges are available which can be fired from a rifle or shotgun. Also, small, flare signalling devices may be purchased and included in your survival kit.

"The best signals are fires. A large bright fire at night or a smoky one by day can be easily seen. Be careful to keep your fire under control because an uncontrolled fire could destroy your camp and threaten your life.

"The signal mirror is an excellent device for attracting attention. On a clear day, mirror signals may be seen for up to ten miles (16 km) at ground level and at much greater distances from an aircraft.

"Carry a shrill whistle like that used by police forces and mountain rescue teams. It has a loud, distinctive noise. If you do not have such a whistle, improvise one by blowing across the mouth of an empty cartridge case.

"Carefully consider using your firearm to attract attention. Resist the urge to fire more than one or two shots on the first day you're lost because others will likely think you're shooting at game and ignore your signal shots. However, if you're seriously injured and bleeding heavily, fire your ammunition off in groups of three shots at a time with 10 seconds between each shot. Wait 10-15 minutes for an answering signal shot. If nothing is heard, fire a second group of three shots. Repeat this procedure as long as your ammunition supply will allow.

"If you're not seriously injured, limit your signal shots to the late evening or night of the first day you're in trouble. Fire signal shots spaced an hour or more apart through the night. Conserve enough ammunition to shoot game for food in case you must survive for a week or more (five or more cartridges).

"Sound carries best during the evening quiet, just before dark. This is the best time to use a sound signal.

"If you decide to leave your place of shelter, be sure to leave a message indicating the direction you're going. Make a large arrow on the ground from any available material–stones, tree branches, brush, trampled down grass or snow, or earth–so that search aircraft passing overhead will know which direction to look. Ground searchers will also be guided by such signals. If possible, leave a note explaining where you are headed and what time you left camp.

"As previously indicated, your best chance of survival is by staying put at one location. To signal your location to airborne searchers, besides using a fire, you should mark a large "X" in a clearing near your survival camp. Use heaps of stones or earth, piles of brush, tree branches or trampled down grass or snow. Lay branches beside the lines of the X to create shadows and make your signal more visible from the air. Such signals can even be seen in the moonlight from aircraft." (Basic Hunter's Guide, pp. 251-253)

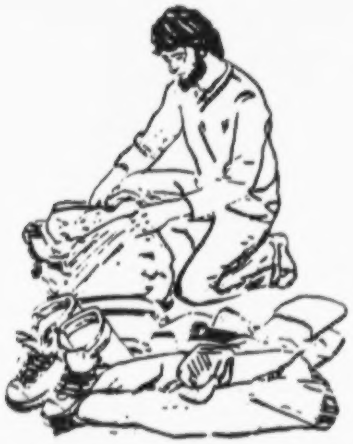
How important is a positive attitude in wilderness survival?

As the National Rife Association notes, "pain, cold, thirst, hunger, fatigue, boredom, loneliness and fear are feelings we've all had before, but never so strongly as when we must survive a serious emergency situation. No matter how severe these feelings are, they can be overcome when you know how to deal with them.

"Pain is nature's way of telling a person that something is wrong. Attend to any injuries immediately, using appropriate first aid treatment.

"If your mind is busy making plans to cope with your situation, you'll feel less pain and may even forget about it for a while. If you give in to the pain, you might stop trying to survive.

"Cold is a serious threat to survival. The victim of cold often loses the ability to function normally. When you are very cold, it's hard to think about anything other than becoming warm.



"Exposure to cold, wetness and wind–even in temperatures that are not considered severe–can lead to hypothermia.

"To survive in the outdoors, the hunter must find ways to maintain his [or her] body temperature by staying dry, building a fire and constructing a shelter to protect him[her]self from the weather.

"Don't think about how thirsty you are. A person can survive for several days without water if they're in normal health. [Though dehydration is of real concern when it's hot.]

"Instead, keep your mind active and busy with plans for coping with the situation at hand. Such activity may even make you forget for a while about how thirsty you are. Later, you can easily locate water near your survival camp or collect it when it rains or snows.

"Though hunger will make you feel uncomfortable, it is not a serious factor in most survival situations. Your body fat will supply energy to enable you to survive 30 days or more if your health is normal.

"When you are tired you do not think clearly and can become careless. Extreme fatigue can even destroy a person's desire to survive.

Though overexertion is the usual cause of fatigue, lack, of sleep and boredom may contribute to it. Try to rest as much as possible and avoid over-exertion. By making a comfortable shelter, you will be able to sleep soundly and avoid fatigue.

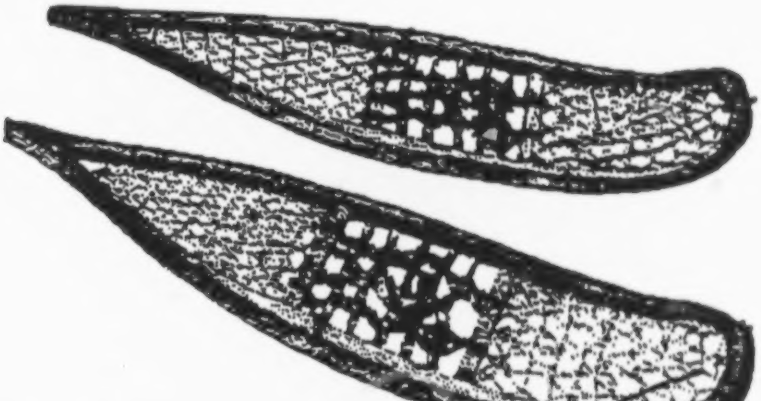
"Boredom and loneliness creep up on you when nothing happens and nobody comes to rescue you. You may act irrationally and your actions could make matters worse.

"Your reaction to boredom and loneliness can often be more of a problem to your survival than any physical factors such as pain, cold, thirst or hunger.

"Boredom and loneliness can be overcome by:

1. Making decisions and acting on them.
2. Adapting to your situation and improvising solutions to problems.
3. Tolerating solitude.
4. Avoiding panic and keeping calm.
5. Thinking positively and planning ways to overcome problems.
6. Being patient.
7. Keeping your hands busy–even by whittling a stick.

(Basic Hunter's Guide, pp. 243-244)



How do I make survival snowshoes?

Being caught in deep powder snow without snowshoes can prove lethal. The best way to survive any life-threatening situation is of course to avoid the situation altogether. You can do that by going when conditions are not hazardous. Another way to survive such threats is to have a remedy available when needed. Knowing places or situations where you can get caught in deep snow may prompt you to keep a spare pair of showshoes in a backcountry cabin, to put a pair in the aircraft you use, or to carry them on your snow machine. Such precautions might keep you from having to construct emergency snowshoes.

The idea of snowshoes is simply to distribute your weight over a larger surface area. With that increased surface area, you are "floating" on top of the snow in much the way a flat bottomed boat floats on a lake.

The British Columbia Forest Service's publication Wilderness Survival notes that a pair of emergency snow shoes can be made of two conifer boughs and rope, string, wire or some other form of fastening. The boughs, about as thick around as a finger, a little over one meter in length, are stripped of branches and leaves, then both ends are brought together to make a teardrop shape. Those ends are lashed one over the other. Webbing is laced across the boughs with 4 to 7 meters of light nylon cord.

What are the symptoms of and treatment for hypothermia?

Hypothermia is Alaska's greatest killer. Hypothermia is the lowering of the body's core temperature. Such gross loss of heat can slow the body's functions and cause death.

As the National Rifle Association notes, "Hypothermia is a condition which occurs when inner body temperature drops to a subnormal level. It impairs a person's ability to think and act rationally and can cause death.

"A person's normal core (inner body) temperature is 98.6° (37° C). When the body begins to lose heat, a person will react in two ways to stay warm:

1. They will shiver.
2. They will probably stamp their feet and move about.

"Both these actions drain energy and slowly lead to exhaustion.

"If this continues, the body's energy reserves will be depleted. The body will lose heat faster than it can produce it and the core temperature will drop. As body temperature decreases, the vital internal organs–brain, liver, heart–lose their ability to function. Cooling of the brain seriously impairs judgment and reduces reasoning power. This is hypothermia.

"Hypothermia victims first experience uncontrollable shivering, then confusion, loss of memory and finally unconsciousness and may die.

"Whenever you are outdoors, think about hypothermia. Watch for symptoms of hypothermia in yourself and others.

"The following are symptoms of hypothermia:

1. Uncontrollable spells of shivering
2. Slurred or slow speech, incoherent and vague statements
3. Memory lapses
4. Fumbling hands, frequent stumbling, lurching gait
5. Drowsiness
6. Exhaustion, inability to get up after a rest.

"A victim of hypothermia may deny they are in trouble. If a person shows symptoms of hypothermia, believe what you see, not what the person says. Even mild hypothermia requires immediate treatment.

1. Move the victim of hypothermia to shelter and warmth as quickly as possible. If shelter is not readily available, immediately build a fire to warm the patient.
2. Remove the patient's wet clothes.
3. Apply heat to the patient's head, neck, chest and groin.

    a) Use warm, moist towels or other cloth material, hot water bottles or heated blankets to warm the patient. As the heated materials cool, replace them with other warm packs.
    b) If a sleeping bag or blanket is available, place the naked patient in it. Remove your clothing and lay close to the person, inside the bag, allowing the heat from your body to warm the patient.
    c) As the patient recovers, give warm drinks. This will help raise the core temperature. Don't give a hypothermia victim alcohol."

(Basic Hunter's Guide, pp. 261-262)

Tools for Self-Sufficiency

Teacher Page

Competency: **Use tools for self-sufficiency**

Tasks: Use and maintain:

a. axe
b. saw
c. skiff
d. chain saw
e. canoe
f. kayak
g. hunting knife
h. auger
i. hammer
j. handsaw
k. ice scoop
l. ice auger
m. rifle
n. other tools as applicable

Introduction

Some of the tools of the subsistence user are traditional, handed down in the family. Many who live a subsistence or self-sufficient lifestyle use the same tools that the handy person uses around the house, the sports hunter may use on a hunt, or the woodsperson uses in getting wood. Many of us practice self-sufficiency skills every day. Since basic self-sufficiency tools are those which work easiest and best at the lowest possible price, a host of different tools might contribute.

Overview

A self-sufficient or subsistence lifestyle necessarily involves a good use of tools. Being handy with hand and power tools opens the student up to a wealth of professions and fields, and of course makes a person self-sufficient.

Suggested Learning Activities

1. Assist a carpenter, construction worker, or woodsperson "on the job" to practice using a saw, auger, hammer, chain saw, axe, and other tools. Ask this person for specific tips and instruction on the most efficient use of these tools.
2. Build an outhouse, birdhouse, bookshelf, or other project, applying your skills with these tools.
3. Use a chainsaw, axe, splitting maul, sledgehammer, and wedge to cut, split, transport, and stack cord firewood.
4. Accompany an experienced kayaker or canoeist on a day-long kayak or canoe trip. Ask your guide about safety precautions and concerns in such a craft. Find out how this person would deal with capsizing or swamping.
5. Accompany an experienced icefisher on an ice fishing expedition to learn how to use an ice auger and other equipment for ice fishing. How does this kind of fishing differ from other methods?
6. See learning activities in the hunting and fishing sections as well.

Resources

American Association for Vocational Instructional Materials, 120 Engineering Center, Athens, GA 30602. *Ask for agricultural mechanics curriculum and catalog of materials. Though related to farming, much of the materials related to tools applies to self-sufficient operations.*

California Polytechnic State University, Vocational Education Productions, San Luis Obispo, CA 93407. *Great source of materials for a range of tool use.*

Hobar Productions, 1234 Tiller Land, St. Paul, MN 55112 (612) 633-3170. *Publications on a wide range of tool use. Includes comprehensive series of software concerning tools, construction and maintenance.*

Texas A and M University, Vocational Instruction Service, F.E. Box 2588, College Station, TX 77843-2588 (409) 845-6601. *Student materials on tool use and maintenance.*

Books:

Chapman Piloting: Seamanship and Small Boat Handling, Hearst Marine Books, 105 Madison Avenue, New York, New York 10016.

Construction Trades Curriculum, Construction Trades Resources, Industrial Education Curriculum, Vocational Education Library, Office of Adult and Vocational Education, Department of Education, P.O. Box F, Juneau, AK 99811. *Materials include "Suggested Resources" for tools.*

Home Improvements Manual, Reader's Digest Complete Do-It-Yourself Manual, Reader's Digest Association, Inc., Pleasantville, New York

The Home Shop Machinist, Village Press, Inc., P.O. Box 1810, Traverse City, MI 48107

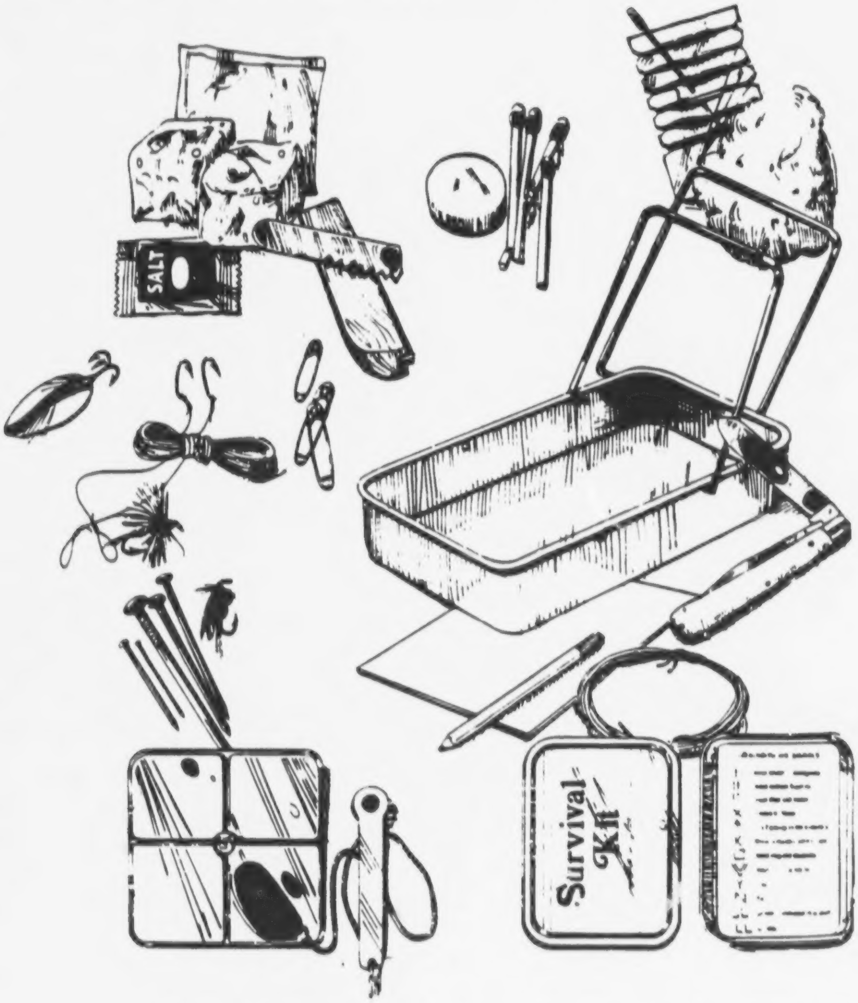
Tools for Self-Sufficiency

How do I use and maintain some tools for self-sufficiency?

The tools of the self-sufficient Alaskan are the same tools that a subsistence user, home owner, or commercial craftsman may use. The difference for the self-sufficient user may be in 1) cost and 2) efficiency.

Sometimes the only difference between store-bought and home-built items are their cost. On the other hand, a hand auger may be less expensive when building a cabin, but an electric drill is much more efficient. The self-sufficient person needs to balance cost with efficiency. Keep in mind that the "modern American society" (the mass society) is a throw-away society. Our wastes are consuming large areas of the landscape in urban areas. Whatever you recycle, reuse or make yourself can reduce this waste, can save you money, and will contribute to efficient use of resources overall.

Use of hand and power tools, with the exception of specialty items such as traps, snares, rifles, and chainsaw are typically covered in industrial education or woodworking classes.



Some Self-sufficiency tools, courtesy of National Rifle Association

Building Nets
Teacher Page

Competency: **Build nets**

Tasks:
Determine web size for species to be fished
Size nets
Obtain material for net building
Build nets according to plan
Compensate for stretching to set knots

Introduction

Different fisheries require different nets. There are several different types of nets. Drift gill nets and set gill nets catch over 70% of the salmon harvested statewide. These nets are "hung" using commercial webbing. Some are also built from scratch, using seine twine.

Overview

A herring fisherman from Unalakleet recently related that "the market is wide open for those who are interested in repairing and working on nets." With the general rise in prices of salmon, fishers can afford to hire out their net building and construction. For the self-sufficient person, gear repairs and replacement is not getting any cheaper. You can save money if you build and repair your own nets.

Suggested Learning Activities

1. Watch someone in your community hanging or building a net. Ask that person to tell you how they determine the right web size, size the entire net, get materials for net building, plan the net, and build the net, setting the knots.
2. Practice tying knots used in net hanging. Assist a net hanger in his or her work for further practice.
3. Build your own net, according to a plan. Think about web size, net size, and materials. After you build the net, set your knots.
4. Put your net in the water and see how it fishes!

Resources

University of Alaska Marine Advisory Program, P.O. Box 1549, Dillingham, AK 99576 842-1265

Books and Pamphlets:

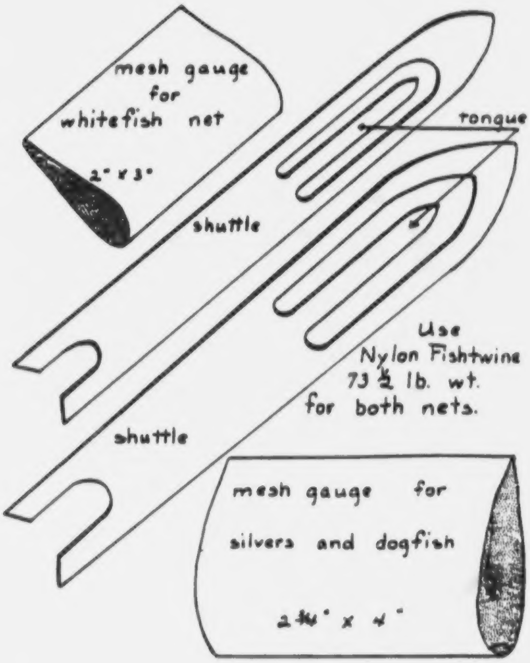
"Gillnet Hanging", by Paula Cullenberg, Alaska Marine Advisory Bulletin #29, Alaska Marine Advisory Program, Carlton Trust Building, #220, 2221 E. Northern Lights Blvd., Anchorage, AK 99508-4143 (907) 274-9691.

"Making a Fish Net," by Mildred Jacobsson, Adult Literacy Laboratory, University of Alaska Anchorage, July, 1977. *Available from Nine Star Enterprises, Inc., 650 W. International Airport Road, Anchorage, AK 99518. (907) 563-3174.*

Building Nets

How do I determine the web size for the species to be fished?

The net salesman can help you determine the web size which is needed. You can also ask other fishers. Measure mesh size by stretching the top and bottom knots of one diamond in the mesh so that both sides of the diamond are together. The distance from the top of the top knot to the top of the bottom knot is the mesh size. ("Gillnet Hanging," p. 4)


mesh gauge for whitefish net
2" x 3"
tongue
shuttle
Use Nylon Fishtwine 73 ½ lb. wt. for both nets.
shuttle
mesh gauge for silvers and dogfish
2¼" x 4"

Tools for net building

How do I size nets?

Sizing nets from purchased webbing involves determining the hanging ratio. Paula Cullenberg's publication, "Gillnet Hanging," takes you through the mathematics of sizing nets. As Paula states, "Determining the hanging ratio and hanging distance is critical in constructing a gillnet that fishes successfully." ("Gillnet Hanging," p. 6)

Where do I obtain material for net building?

Historically Native people used sinew for fish nets. With the influx of the Russians and Euro-Americans, cotton twine replaced sinew. Synthetic fibers, introduced in the 1950s generally replaced cotton. Seine twine is available at fishing supply stores, as is webbing of varying mesh size.

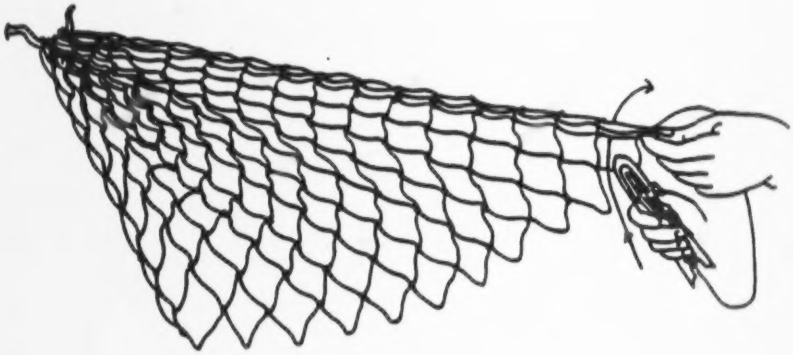
How do I build the nets according to plan?

According to Paula Cullenberg:

"Hanging a gillnet is tying the web to the corkline and leadline. A good hanging job is the fine tuning of a net to a particular fishery and can be critical to the net's success in catching fish. Nets are hung differently for set nets or drift nets, for heavy fishing or 'scratch' fishing, or for fishing in waters filled with seaweed or other debris.

"Even if you buy your net pre-hung, you should understand what net hanging is all about. That way you can specify how you want your net hung to fish most successfully in your area. You will also know what to do if the net gets damaged or if you decide the web or change your hanging ratio.

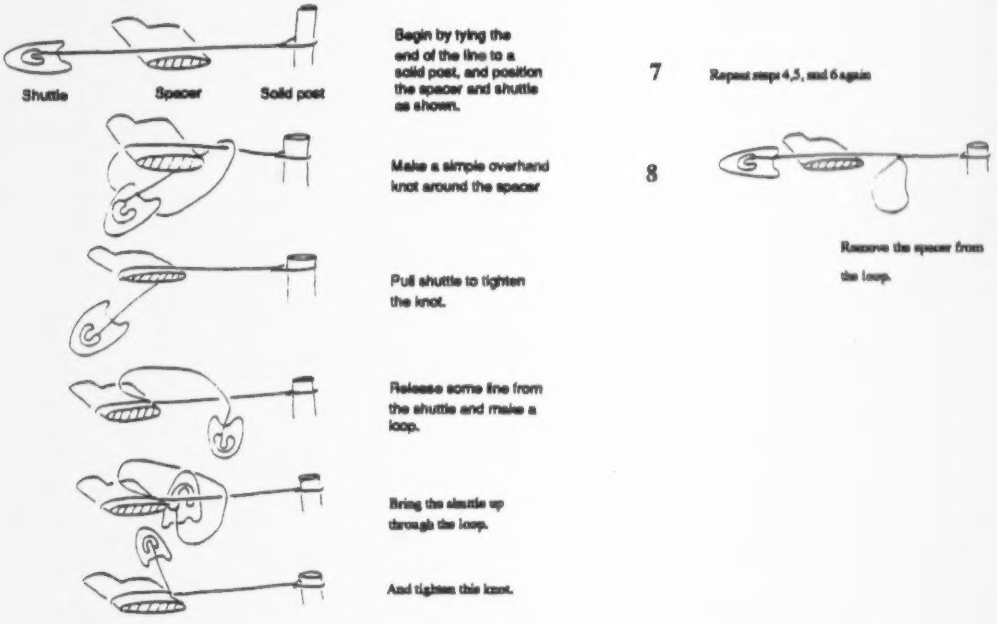
"Hanging a good net is an art and there are many excellent professional hangers who are noted for their speed, the strength of their knots, and their ability to custom fit a net to a particular fishery. Every net hanger devises his or her own technique. ...For the specifics on your fishery and your region, you'll need to talk to an experienced net hanger, your net salesman or other fishermen. What works for them will probably work for you.



First, think about what type of fishing you can expect. The standard net is 100 fathoms of web hung onto 50 fathoms of corkline. This is a 2:1 ratio of web to corkline length. The net is hung 'even' ("Gillnet Hanging, p. 1)

How about setting knots?

Pull tight on the knots to set them. If the knot is not tight, it may slip. If you are making your own webbing, you will be using a net gauge to tighten your knots against. The net gauge is simply a piece of wood over which each mesh is made, making each mesh equal in size.



1 Begin by tying the end of the line to a solid post, and position the spacer and shuttle as shown.

2 Make a simple overhand knot around the spacer

3 Pull shuttle to tighten the knot.

4 Release some line from the shuttle and make a loop.

5 Bring the shuttle up through the loop.

6 And tighten this knot.

7 Repeat steps 4,5, and 6 again

8 Remove the spacer from the loop.

Operating an Outboard Motor

Teacher Page

Competency: **Operate an outboard motor**

Tasks:
Install outboard on boat
Start outboard both with retractable and auxiliary ropes
Change spark plugs
Lift motor in shallow water
Change propeller
Hand-start motor using pull-rope

Introduction

Entrenched in the Alaskan lifestyle for over fifty years, today's self-sufficient or subsistence-using Alaskan uses outboard motors. Using, troubleshooting, and some minor repairs of outboard motors are integral to many aspects of the Alaskan lifestyle.

Overview

A number of jobs utilize outboard engines in the course of their work. Fisheries technicians, self-sufficient hunters, gatherers, or fishers working on Alaska's coastline, lakes and navigable rivers are never far from an outboard motor. The "Alaska Career Guide" describes the duties of a "Small Engine Repairer:" "service and repair gasoline or diesel engines of such items as motorcycles, chain saws, and snow machines. Tune ignition systems, overhaul carburetors, replace piston rings, hone cylinders, and install new bearings…Many employers prefer repairers with several years of experience. If willing to train, they look for high school graduates who have mechanical aptitude and interests related to their specialty…" Outside of the cash economy, those who use and repair their own outboards save a considerable amount of money working on their own outboards.

Suggested Learning Activities

1. Invite an outboard mechanic to class to demonstrate, using chalkboard drawings, other illustrations, and, if possible, an outboard motor in a tank, how an outboard motor works. Focus on how to put the motor on a boat, how to start it, change spark plugs and propellor, and how to life the motor in shallow water.
2. Take a field trip with a willing boater who will allow you to put the motor on the boat, lift and lower the motor, start it, and change spark plugs and propellor.

Resources

Small Engines and Outboard Marine Mechanics Curriculum, Office of Adult and Vocational Education, Alaska Department of Education, Box F, Juneau, AK 99811.

Operating an Outboard Motor

How do I install the outboard on the boat?

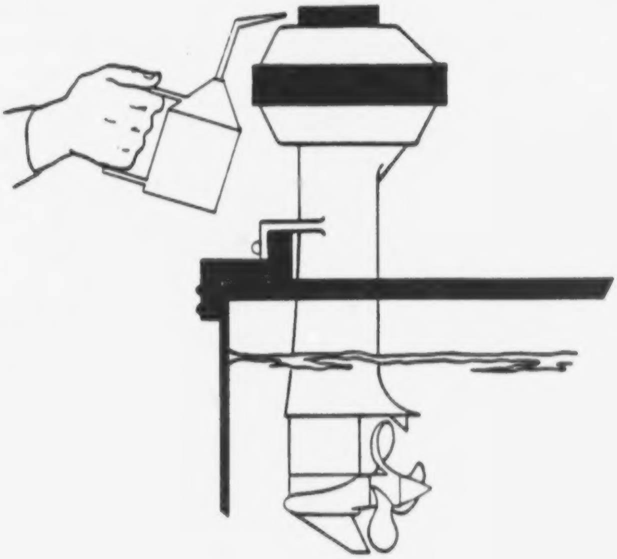
Install an outboard motor either on land or in very shallow water. Outboard motors, especially new ones, seem to have an almost uncanny ability to find their way to the bottom. Remember that outboards are heavy, so have someone help you. Some people use a dock hoist. Make sure the motor is tied or chained to the boat at all times, even after it is installed. One fisherman related the story of two outboards fastened to a 15-foot whaler, that struck, at high speed, an iceberg in a river. The iceberg flipped both motors in the water and he was left to float back to camp. That was a $3,000 loss.

How do you start an outboard?

Some outboards are started with a quick pull of the starter rope. Larger units have electric starters. If neither works many motors have a place to wrap a piece of strong line or a spare pull-rope as a backup system. Remove the engine cowling to see if you can use a spare rope.

How do you change spark plugs?

Make sure that you have tools before you start out on your trip. A small tool kit with both types of screwdrivers, a little sandpaper, some WD-40, an extra starting rope, a spark plug wrench, several extra spark plugs (new), and some tape could prove to be your saving grace in a pinch. Change the spark plugs by placing the spark plug wrench over the plug, using a screwdriver to turn the plug. Unscrew the plug, clean the hole, then carefully turn the new plug in the hole. Never force the plug with your wrench–you could strip the threads. Tighten the plug hand-tight.



When should I lift the motor and for what reasons?

Lift the motor in shallow water and to row or push the boat. If you have a "kicker" or small engine, use it to get to the beach or out to deeper water. Special jet units allow outboards to operate in shallow water. Boaters should never lift an engine which is running.

How do I change the propeller?

Owners' manuals explain how to change the propeller. The propellor is set on a propeller hub which sits on the propeller shaft. That shaft has a hole in it for installation of a shear pin. The shear pin protects the lower unit. If the propeller hits something, rather than the shaft breaking, the shear pin breaks. For this reason, the boater should carry extra shear pins (the correct size and make for that motor) at all times. The propeller is usually held by a propeller nut which contains a cotter pin. The boater should also carry extra cotter pins. A damaged propeller is best changed on land (it's very easy to drop parts in the water) or in shallow water. The cotter pin and propeller nut are removed, the propeller is pulled off, and the replacement propeller is re-placed on the propeller hub. If the shear pin needs to be replaced, the broken one is removed, and the new one pushed through the propeller shaft. When replaced, the cotter pin should be properly bent.

How do I hand-start the motor?

Many electrically-started outboards also have hand-start capabilities. More than one fisher has been stuck on a sandbar or out at sea with a dead battery and has to start the motor by hand. Some outboard motors allow electric starting, retractable rope pulley starting, and optional rope starting. Always carry an extra pull-start rope in your boat box.

Operating an ATV
Teacher Page

Competency: **Operate an ATV**

Tasks:
Operate the vehicle safely
Clean and change spark plugs
Tow ATV trailer
Troubleshoot generator

Introduction

The introduction of the All-Terrain Vehicle (ATV) to Alaska has probably brought more changes to the self-sufficiency lifestyle than any other device since the introduction of the bush plane. All-terrain vehicles are hardy, light, simple to operate, durable, are built for off-road operation, and can be transported simply in a pickup or airplane. They have brought mobility to many rural (and urban!) areas.

Overview

ATVs have good points and bad points. They offer convenience and easy transportation, but can increase costs and complications. A myriad of vocations have changed through the introduction of ATVs. Fishers use them to travel to and from fishing sites. Hunters use them to transport gear and game. Berry pickers use them, villagers use them to move from place to place–in all weather. Small engine mechanics have benefited from this mechanization and those selling ATVs and parts and materials have benefitted as well.

Suggested Learning Activities

1. Invite an experienced, mature ATV user to class to discuss how to operate an ATV safely.
2. Practice safety while operating an ATV and towing a trailer, following the expert's tips and the suggestions in this chapter.
3. Invite someone who is familiar with the ATV's engine to class to demonstrate how the engine works and how to perform minor repairs.
4. Perform minor repairs and troubleshoot the generating system on an ATV as needed.
5. Research and debate the ethics of using ATVs in wilderness or recreational areas.

Resources

Small and Outboard Marine Engines Curriculum, Office of Adult and Vocational Education, Alaska Department of Education, P.O. Box F, Juneau, AK 99811

Books, Pamphlets and Videos:

All-Terrain Vehicle (ATV) Maintenance Manual, 2nd Edition, Intertec Publishing Corp., P.O. Box 12901, Overland Park, KS 66212, 1988

"ATV Owner's Manual Supplement," *Available from any ATV dealer. Honda publication S4027, Kawasaki: 99969-3—3; Suzuki: 99923-09884; Yamaha: LIT-17626-0-00*

"Fun and Safety: The Winning Combination," *Available from Honda Dealers.*

"Honda ATV Safe Ride Guide, " *Available from Honda Dealers.*

"Off-Road Vehicle Recreation," Bureau of Land Management pamphlet.

"Off-Road Vehicle and Other Traffic Zoning," Chugach National Forest, *available through U.S. Forest Service, Chugach National Forest.*

"Revved up and Roughed Up: Three Wheelin' in Alaska," 20 minute VHS video, 1985. *Available through the Alaska State Film Library, Cooperative Extension Office, or from KYUK Video Productions, Pouch 468, Bethel, AK 99559 (907) 543-3131. Two dramatized accident sequences alternate with the testimony of real victims of three wheeler crashes.*

Operating an ATV

How do I operate the vehicle safely?

Wear a helmet and protective clothing and drive slowly and carefully. Take special care when turning–ATVs can turn over. Beware of operating the ATV on roads. Three wheelers are innately unstable. In fact, because they are so unsafe, they're no longer sold in this country.

How about cleaning and changing the spark plugs?

The appropriate spark plug for each engine is listed in the maintenance section of the manual for each engine. Under light loads, low speeds or only short trips, a spark plug of the same size with a higher (hotter) heat range may be installed. If subjected to heavy loads, a plug can foul. To clean, use an abrasive such as sand paper, though a special abrasive nonconductive to electricity works best. Clean the grounded and insulated electrodes and return them as nearly as possible to original shape by filing with a point file. You can adjust the electrode gap by bending the ground electrode. To avoid all the problems with cleaning ad adjusting plugs while afloat, carry some extra *new* plugs.

What about towing the ATV trailer?

Like the tow sled, the ATV trailer must be operated at a safe speed. Loads can bounce out, and a bouncing trailer can cause an accident. Don't overload the trailer. Keep trailer tires at recommended pressure. Manufacturers offer the following tips:

- Never exceed the stated load capacity for the ATV
- Cargo should be properly distributed and securely attached.
- Reduce speed when carrying cargo or pulling a trailer. Allow greater distance for braking.
- Always follow the instructions in Owner's Manual for carrying cargo or pulling a trailer.

How do I troubleshoot the generating system?

In general, ATVs use alternating current via a flywheel magneto or energy transfer ignition system. If a battery is used, the generated alternating current must be changed to direct current (DC) usually through a rectifier. Rectifiers are usually repaired by replacing the unit. If the rectifier will not pass current in either direction, replace it. See repair manuals, small engine shop, or industrial education teacher.

Operating a Snow Machine

Teacher Page

Competency: **Operate snow machine**

Tasks:
Operate snow machine safely
Operate snow machine at a safe speed
Clean and change spark plugs
Haul tow sled

Introduction

Operating a snow machine is a skill basic to many rural areas in Alaska. Though numerous Alaskans have grown up with the devices, knowledge of some basic skills and review for those with experience help to prevent accidents and to promote survival in isolated areas.

Overview

Snowmobile experience is a necessity not only for basic self-sufficiency and transportation in arctic Alaska, but also for many jobs in regulation inspection and enforcement and protection.

Suggested Learning Activities

1. Invite someone to class who is mature and experienced in snow machine use and repair. Ask him or her to bring a snow machine and to explain how it works, how to perform minor repairs, and how to operate the machine safely.
2. Practice the safe operation of a snow machine and haul a tow sled or trailer. Perform minor repairs as needed.
3. Research and debate the pros and cons of snow machine use in a wilderness or recreational area.

Resources

Small and Outboard Marine Engines Curriculum, Office of Adult and Vocational Education, Alaska Department of Education, P.O. Box F, Juneau, AK 99811

Books:

Alaskan's How to Handbook, by Joe Dart, Interior Alaska Trapper's Association, P.O. Box 60418, Fairbanks, AK 99706

Operating a Snow Machine

How do I operate a snow machine safely?

When using ATVs, ATCs and snowmachines, go slowly and take care. Too many are hurt too often on snowmachines. Realize that you are not invincible on a snow machine, just as you aren't in a car or truck. Wear a helmet and carry survival equipment. Take extra care when operating the machine on frozen lakes or rivers, making sure there is adequate ice for the weight.

Is it important to operate the snow machine at a safe speed?

Many people who would not think of speeding in a truck or car somehow think that when they're on an ATV or snow machine, they're less prone to getting hurt. Nothing could be further from the truth. You can get badly hurt on a snow machine. The machine must be operated at a safe speed for conditions. Just because you can operate at full throttle some times doesn't mean that when snow conditions change or there's a lot of ice, you can run in the same way.

It's unethical to chase game in a snow machine. As Alberta's Trapping and Conservation Manual, 1987 states, "There is nothing very sportsmanlike about the few snowmobilers who have been known to chase wild animals until they drop dead of exhaustion. This is a cruel and barbaric behavior which is indulged in by very few, but which also gives a responsible snowmobiler a bad name. Anyone observing snowmobilers indulging in this "sport" should record the license number of the snowmobile [or a description] and report the matter to [Fish and Wildlife Protection]. (Trapping and Conservation Manual, 1987 , p. 252)

How do I clean and change spark plugs?

There's more to troubleshooting a snowmobile than just cleaning and changing the spark plugs. As Alberta's Trapping and Conservation Manual, 1987 states, "the maintenance and care you give your snowmobile contributes significantly to the fun and safety of your snowmobiling adventures. It is very important that every snowmobile receive regular maintenance and care, but is doubly important that it be done correctly. Appreciate the complexity of your snowmobile, recognize the rough exposure it receives, and maintain it properly while recognizing your limitations to perform mechanical procedures.

"Each snowmobile should be given a thorough check periodically, and a general check before each ride. Snowmobiles are often operated in the harshest conditions of weather and terrain. Always follow the maintenance schedules and procedures specified in your owner/operator manual to keep the vehicle's components lubricated. Check for loose, worn or misaligned components. Be assured that the carburetor and throttle linkages are set correctly for efficient and proper operation. Remember the periodic cleaning and adjustment of the spark plug(s) gap.

"Always make certain that your throttle, emergency stop switch, brake, steering and light systems are functioning properly. Never operate your snowmobile unless the hood and the guards are in place and firmly attached.

"Regular maintenance of your snowmobile and the use of good judgment in its operation will generally prevent breakdowns. Many problems encountered on the trail can be corrected on the spot if you will carry a minimum assortment of tools and spare parts. Listed below for quick reference are some of the most common snowmobile problems and their probably causes. Following these procedures should get your vehicle started again.

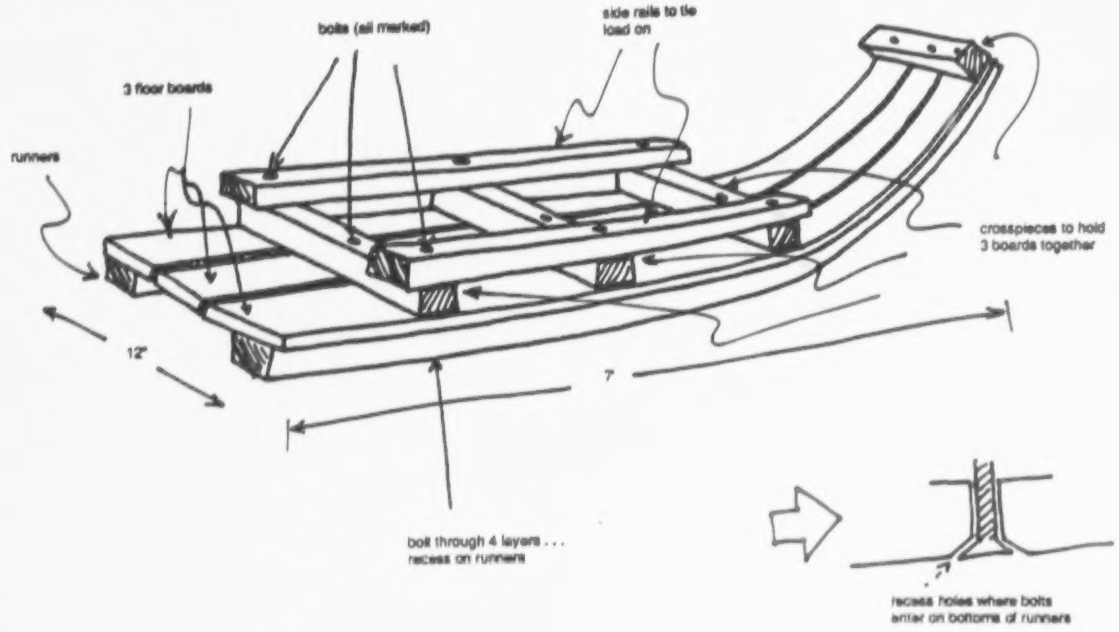
Red Fox tracks

TROUBLE	PROBABLE CAUSE	REMEDY
Engine won't start	Emergency stop switch depressed	Turn on.
	Ignition switch off	Turn on.
	Spark plug fouled	Clean or replace
	Improper or no ignition	Check spark plug leads. Check for correct
	spark plug gap and condition.	
	Fuel tank empty.	Fill.
	Engine starving for fuel	Prime and check carburetor adjustment. Check choke position. Check fuel pump operation. Check lines.
	Plugged fuel line or filter	Clean lines and filter
	Engine floods	Check carburetor adjustment and position of choke. Open choke, wait one minute or more before restarting.
Rewind starter rope does not retract.	Friction too high in starter	Tap starter housing while keeping small amount of tension on rope.
Rewind starter rope fails to engage or retract.	Broken or worn parts internally.	Use emergency start provisions.
Engine runs rough or will not idle.	Carburetor out of adjustment	Adjust carburetor.
	Poor ignition	Follow procedure for 'improper or no ignition' above under 'engine won't start.'
	Idle speed set too low	Increase idle speed setting
Low RPM.	Poor ignition	Follow procedure above
	Carburetor air intake plugged	Remove foreign material
Vehicle fails to move when throttle is depressed.		Stop engine.
	Drive belt worn or broken	Replace drive belt.
	Drive chain out of adjustment or broken.	Adjust or replace drive chain.
	Track blocked.	Tilt machine on side and remove blockage.
Low vehicle speed.	Drive belt wrong size or worn	Replace drive belt.
	Clutches out of alignment	Realign.
	Operating on only one spark plug	Follow same procedure as 'improper or no ignition' under 'engine won't start.'
	Chain and/or track too tight or loose	Readjust
	Packed snow in vehicle	Remove while engine is stopped.
Lights won't work.	Loose connections	Check and tighten.
	Corroded connections	Clean.
	Bad switch	Repair or replace.
	Bulb burned out.	Replace bulb.

(Trapping and Conservation Manual, 1987, pp. 249-250)

How do I haul the tow sled?

The tow sled is a wooden sled for pulling loads behind snow machines. A simple tow sled can be made of boards. Note the picture. Loads towed behind snow machines should be towed at a safe speed. Don't overload the sled. Loads will bounce loose, sleds boards can break, and hitches can break.



For pulling behind snow machines

Bend three 4" boards and two runners as shown.
Bolt all pieces together. This quick sled thanks to
Henry Titus of Ruby, AK.

bolts (all marked)
side rails to tie load on
3 floor boards
runners
crosspieces to hold 3 boards together
12"
7'
bolt through 4 layers . . . recess on runners
recess holes where bolts enter on bottoms of runners

Troubleshooting a Small Engine
Teacher Page

Competency: **Troubleshoot a small engine**

Tasks:
Compare small engines of:
  a chainsaws c. outboards
  b. snowmachines d. A/C generators
Explain systematic approaches to troubleshooting engines and engine systems
Check to see if engine is:
  a. getting gas c. flooded
  b. getting spark d. maintaining compression
Correct above problems

Introduction

In many cases, almost without exception, the self-sufficient lifestyle in Alaska involves small engines. Small engines propel skiffs, supply power for power tools and power ATVs and dirt bikes. Small engines have become a part of many Alaskan lifestyles, from the urban sportsperson who takes a skiff out for the weekend, to the Bering Sea walrus hunter who relies on a trusty outboard to obtain food for the family.

Overview

Any subsistence or self-sufficient resource user uses small engines. Being able to troubleshoot and to make cursory repairs to small engines will save the user money and time. Additionally, those who can troubleshoot malfunctioning engines are those who can rely on their engines. With a good basic understanding of engine fundamentals, the user can be sure to use and not abuse equipment. Work in the field of small engine mechanics and repair is well documented. For small engine repairers, the "Alaska Career Guide" states, that these people "service and repair gasoline or diesel engines of such items as motorcycles, chain saws, and snow machines. [They] tune ignition systems, overhaul carburetors, replace piston rings, hone cylinders, and install new bearings. [They] also service other components such as transmissions on motorcycles and treads on snow machines. ...Many employers prefer repairers with several years of experience. If willing to train, they desire high school graduates who have mechanical aptitude and interests related to their specialty, such as motorcycle riding.

Suggested Learning Activities

1. Invite a mechanic to class to take apart and demonstrate the workings of engines from: chainsaws, snowmachines, outboards, and A/C generators. Ask this person to discuss how to troubleshoot each engine, how to check to see if the engine is getting enough or too much gas, getting spark, and maintaining compression, and what to do about malfunctions.
2. In small groups: go through troubleshooting procedures for small engines from chainsaws, snowmachines, outboards, and A/C generators by checking the carburetor, spark, and compression. Demonstrate how to correct malfunctions.

Resources

Small and Outboard Marine Mechanics Curriculum, Office of Adult and Vocational Education, Alaska Department of Education, P.O. Box F, Juneau, AK 99811

Books:

Outboard Motor Service Manual, Intertec Publishing Corporation, P.O. Box 12901, Overland Park, KS 66212, 1987.

Small Engine Mechanics, Third Edition, by Crouse and Anglin, McGraw-Hill, 1980.

Troubleshooting a Small Engine

How do some different small engines compare?

Typically small engines are not so much divided into applications of the engines as much as they are divided into two groups: two-cycle and four-cycle engines. The source of power is heat formed by the burning of petroleum products and air. In a reciprocating engine, this burning takes place in a closed cylinder containing a piston. In the two-cycle engine, it takes two piston movements, or strokes, to complete one cycle of engine operation. A stroke is a movement of the piston in the cylinder from top to bottom or from bottom to top. Expansion resulting from the heat of combustion applies pressure on the piston to turn a shaft by means of a crank and connecting rod.

What is a systematic approach to troubleshooting engines and engine systems?

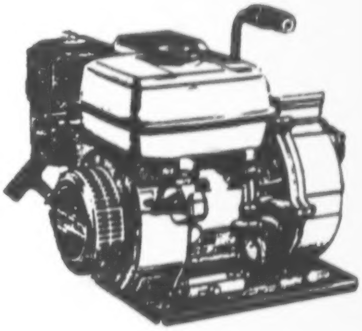
In general, troubleshooting is divided into determining the cause of the malfunction and doing something about it. Any small engines class follows troubleshooting procedures. In many cases, a formal procedure is followed in response to the engine problem. For example, if the engine will not start or is hard to start or if the engine starts then stops, overheats, surges when running, or misses out when running.

What are some areas I need to check?

Basic areas to check include whether or not the small engine is getting gas, if it is getting spark; if it is flooded; or if it is maintaining compression. Again, service manuals have involved explanations of checking each of these areas, as do small engine classes.

How do I correct such problems?

Procedures for correcting such problems depend on the situation–and the problem. It may depend on whether you're in the field or in the warm comfort of a small engine shop. At sea you may be able to simply replace a spark plug with a new one, whereas in the shop you would have the luxury of checking the spark plug electrode gap with the proper size feeler gauge. Small engine teachers and service manuals map out this service step-by-step.



Using A Rifle Safely

Teacher Page

Competency: **Use rifle safely**

Tasks:
Never point rifle at a human being
Make sure rifle is unloaded when cleaning and transporting
Check and double check
Select correct ammunition
Sight in rifle on a rifle range
Break down and clean rifle safely, including:
  a. always pointing weapon away from people
  b. making doubly sure weapon is unloaded
  c. cleaning barrel
  d. cleaning trigger mechanism
  e. running cleaning wads through weapon
  f. oiling and/or greasing weapon

Introduction

Guns are in important part of the natural resources scene in Alaska. Students need to know safe use of firearms as well as choices of ammunition and techniques of hunting. Ethics are an important area of firearms not only for safety, but for protection of the resource.

Overview

Guns are common throughout Alaska. Not only do rural hunters carry guns, but many who live in the city also hunt. Numerous jobs in retail sales involve guns, ammunition, and related equipment. Additionally, the gunsmith profession is a cottage industry that one can pursue out of their home. Strong familiarity with guns is a necessity for the serious student of natural resources in Alaska.

Suggested Learning Activities

1. Invite a representative from the National Rifle Association or another local hunting club to talk with your class about gun safety.
2. Practice carrying, sighting, loading, firing, and cleaning a rifle at an approved range. Follow safety tips listed in this chapter.
3. Create a colorful, neatly-labelled poster reminding people of safety tips for using guns.

Resources

National Rifle Association, 1600 Rhode Island Ave., NW, Washington, DC 20036 *Their inexpensive paperback book Basic Hunter's Guide is a wealth of information to the hunter. That book is available from the Sales Department. P.O. Box 96031, Washington, DC 20090-6031. Quotations used by permission, National Rifle Association.*

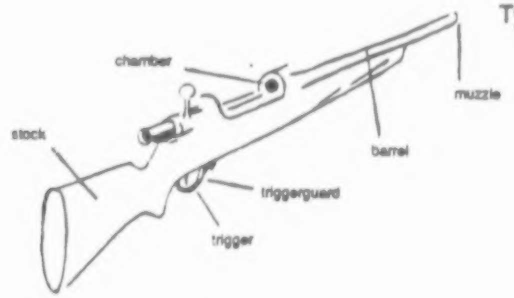
Using a Rifle Safely

What are some tips for safe use of firearms?

The National Rifle Association offers these rules of field safety:

1. "Be positive of your target's identify before shooting.
2. Take time to fire a safe shot. If unsure, you must not move too quickly, pass up the shot. When in doubt–don't! When you wonder whether you should shoot–don't.
3. If you fall, try to control where the muzzle points. After a fall, check your gun for dirt and damage and make sure the barrel is free of obstructions.
4. Unload your gun before attempting to climb a steep bank or travel across slippery ground.
5. When you are alone and must cross a fence, unload your firearm and place it under the fence with the muzzle pointed away from where you are crossing. When hunting with others and you must cross a fence, unload the gun and keep the action open. Have one of your companions hold the gun while you cross. When over the fence, take your gun and your companion's unloaded gun, so that he [or she] may cross safely.
6. Never use a scope sight as a substitute for binoculars.
7. When finished hunting, unload your firearm before returning to camp.

"Rules are safe only when they are obeyed. If a companion doesn't follow the rules of safe firearms handling, you should refuse to hunt with them unless they are prepared to correct this behavior. " (Basic Hunter's Guide, p. 181)



Typical Rifle

What procedures should I follow when cleaning and transporting a rifle?

As the National Rifle Association notes, "almost every young person is interested in firearms. There is something about a gun, old or new, that makes us want to pick it up, see how it feels, and try to work its mechanism. When this interest is properly guided, young people can benefit in many ways. ...But guns are not toys. They must be treated with respect. " (Basic Hunter's Guide, p. 177)

Too many people are injured or killed when cleaning or transporting guns. Make sure the gun is unloaded, and leave the action open when transporting the gun in a skiff, truck or aircraft. When cleaning, make doubly sure the gun is unloaded and then keep the action open. Do not point the gun in the direction of human beings.

Do I need to recheck?

Check and double check. You can't be too careful with a firearm.

How do I select the correct ammunition?

As the National Rifle Association notes, "the ammunition used in rifles, shotguns and handguns varies in size, appearance and parts." Hunters usually determine their ammunition by the impact energy of bullets. As the NRA notes, "the potential killing power of various bullets is argued pro and con amongst hunters. One of the most important factors in determining the killing power of ammunition is its energy upon impact. This energy may be determined from charts.

"Once the energy of your ammunition has been determined, the following guidelines are suggested for judging its killing power for various game animals.

Energy Required at Point of Impact

Target Species	Minimum	Adequate	Preferred
Deer, sheep, goat	900 ft. lb.	1200 ft. lb.	1500 ft. lb.
Elk, bear up to 600 lbs.	1500 ft. lb.	2000 ft. lb.	2500 ft. lb.
Large bear, moose	2100 ft. lb.	2800 ft. lb.	3500 ft. lb.

(Basic Hunter's Guide, p. 175-176)

How do I sight in the rifle?

Sighting the rifle means aligning the sights or guides by which the rifle is aimed. They allow the rifle to shoot straight.

As the National Rifle Association notes, "the correct use of gun sights is essential if your aim is to be accurate. Of the three types of sights, only the open sight requires you to physically line up the sights. This process is called 'sight alignment.'

"The advantage of aperture and scope sights is they do not require conscious alignment.

"The aiming of any sight at a target creates a 'sight picture.'

"The scope sight simplifies aiming. It magnifies, which enables you to see your target better. You don't have to line up a pair of sights. You simply look through the scope and hold the cross hairs on the target to aim accurately.

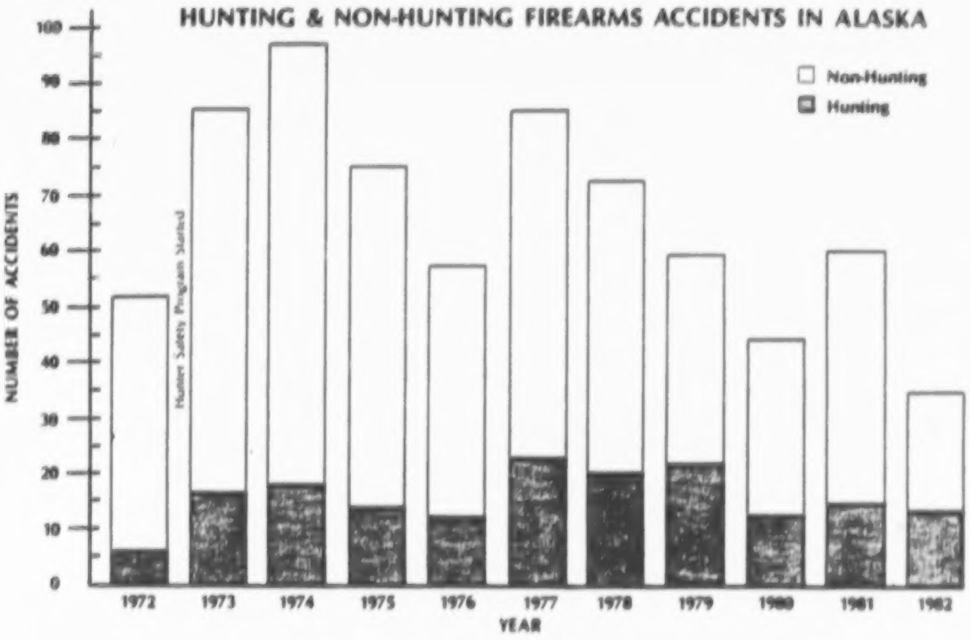
"There are disadvantages to scope sights, however. Because they are precision instruments, they must be handled with extreme care to prevent damage to the delicate mechanism. Scope sights have a very narrow field of view which can make sighting on a moving target potentially dangerous. Because of the scope's viewing limitations, you might not see a person or object coming into the path of your shot.

"When using iron sights on the practice range, if your shots are consistently hitting the target in small groups, but are off center, then you must adjust the rear sight. The rule of sight adjustment is, move the rear sight in the direction you want to move the hits on the target.

"Aperture and scope sights are adjusted by turning the adjustment screws on them in the direction indicated on the sight.

"Before hunting, your rifle must be 'sighted-in', which means the rifle's sights must be adjusted so that the bullet will hit the target at a specific range.

"Set up a target with a safe back-stop at 25 meters and fire at least three test shots. Be sure to use the same type of ammunition you will use when hunting. Check the target. If the group of hits is not at the point of aim, correct the sight. If the shots are not together, it could be due to your technique or some other mechanical factor.



"If your shots are on the point of aim at 25 meters, they will be on the point of aim again at approximately 200 meters due to the bullet's trajectory.

"After the rifle is sighted-in, practice shooting under various light and weather conditions and at various distances.

"Normally you sight-in your rifle for a specific distance by shooting across level ground. However, when shooting in the field, you must make some allowance for differences in elevation between you and your target. When standing on a ridge or in a gully, you will need to aim slightly below the spot you would hold on if you were standing on level ground. This is due to the effect of gravity on the bullet.

"If your rifle is sighted-in correctly and you squeeze the trigger with steady even pressure and remain relaxed, you will score a hit." (Basic Hunter's Guide, pp. 183-184)

How do I break down and clean the rifle?

As the National Rifle Association notes, "regular cleaning will help keep your gun in good working order and will prevent it from rusting. Any firearm which has been stored uncovered for a long time or has been exposed to moisture or dirt, must be cleaned thoroughly before use.

"To clean a firearm you will need:

1. cleaning rod
2. patches
3. powder solvent
4. light gun oil

Before cleaning any firearm, check to be sure it is unloaded.

"After cleaning the gun with rod and patches, apply a light coat of oil to the metal parts of the gun. Make sure to use the oil sparingly. Too much oil can clog the gun and prevent the firearm action from working smoothly.

"When the firearm is clean, store the unloaded gun, in a horizontal position, in a locked cabinet.

"After storage and before you use the gun again, run a clean patch through the bore before firing. Remove all excess grease and oil.

"Ammunition should also be kept clean. If sand or dirt collects in the bullet lubricant, it can damage the bore of the gun.

"Firearms owners should always assume that anyone untrained in the use of firearms will not know how to handle them properly. To prevent accidents, always store firearms and ammunition separately in locked storage units.

"Firearms are precision instruments. Guns which are not operating properly should be examined by a gunsmith or returned to the manufacturer. Even minor repairs should be made by an expert. Beginning and inexperienced shooters should never attempt to repair any firearm." (Basic Hunter's Guide, pp. 181-182)

Radio Operation
Teacher Page

Competency: **Set up and operate radio**

Tasks:
Carefully transport and store radio
Place antenna in proper alignment for transmission
Give location and all pertinent information when transmitting
Perform basic radio operation
Clean battery terminals
Install spare batteries
Key mike for emergency signalling

Introduction

For over 50 years radios have been a large part of the self-sufficient Alaskan lifestyle. While telephones in rural areas have, in some cases, replaced radios, hand held VHFs, citizens band, and single side band radio are for many Alaskans not only their only link to the outside world, but important for safety in remote settings. Students need a familiarity with radios, proper procedure, and emergency uses of the radio. The walrus hunters stranded in the Bering Sea during the spring of 1988 were found after a transmission by a hand-held radio.

Overview

Today wide employment exists in sales, repairing, installing, and replacing radio equipment. Especially along coastal areas, many of those pursuing the self-sufficient lifestyle have come to rely heavily on radios. Familiarization with not only the radio hardware itself, but also with radio protocol as well as commonly-used hardware will open up a field to students.

Suggested Learning Activities

1. Invite a representative from the Federal Communications Commission or some other person with experience in operating radios for two-way communication. Ask your guest to discuss radio protocol, licensing, and operation.
2. Role play using a VHF, CB, or single side band radio for emergency ((try keying the mike) and routine communications, following proper protocol.
3. Practice cleaning and changing the batteries on your radio.

Resources

American Radio Relay League, 225 Main St., Newington, CT 06111 *The source for the amateur radio operator.*

Federal Communications Commission, Field Operations Bureau, 6721 West Raspberry Road, Anchorage, AK 99502 *Contact the FCC for licensing information.*

Books:

Industrial Education Resources, Office of Adult and Vocational Education, Department of Education, P.O. Box F, Juneau, AK 99811 *This guide includes a section on communications, radios, and their operation.*

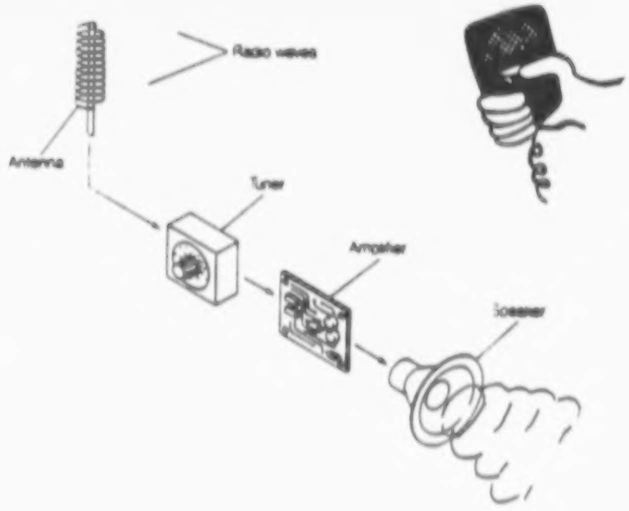
Radio Operation

How do I transport and store the radio?

Radios are becoming more common and prolific every day. Today one can find a hand-held VHF radio, capable of 99 marine channels for less than $200.00. The smallest skiff used for self-sufficiency can signal friends and rescuers over miles of sea. Those in remote locations can call for supplies or communicate with families and friends over vast distances. Despite the fact that radios have allowed those hunting, gathering, fishing and trapping to travel further more safely, in some cases people have gotten overconfident. Equipment can work reliably for long periods of time. Radios are delicate instruments, despite sturdy manufacturing. A radio needs to be stored in a waterproof, shockproof place. A special waterproof box, such as a military ammunition can or diver's dry box, will keep your radio safe and ready for use. Take spare batteries along.

How do I place the antenna in proper alignment for transmission?

It depends on your type of radio and location. Some radios, such as VHF radios, are line of sight. Those radios work well at sea, where there are few objects between boats. Those radios operate well from atop high places. VHF radios work better from atop a hill or plugged into a tall external antenna. Single side band radios bounce off the ionosphere (the upper atmosphere), and as such, may have an antenna in the form of a long copper wire stretched between two trees or poles. The direction this wire is placed, north, south, east or west, is of importance. Those who use single side band radios often go to painstaking lengths of make sure that their antenna wires are aligned properly. Once aligned, single side band antennas are usually left in place.



What information do I give over the air in an emergency?

In an emergency be brief, concise, and precise. Plan what you are going to say before you turn on the radio on. You may get only one transmission, and your message may be garbled. Clarity is of utmost importance. You will need to give your location. You may know your exact location from a topographical map or by noting a landmark nearby. If you need to pace your distance from a convenient landmark, do so before you try to transmit. Offering complex information while you're on the air may confuse the listener.

What is involved in basic radio operation?

Basic radio operation involves being legal; for all radios except citizens band radios you will need to apply for a license from the Federal Communications Commission. It involves calling the party to which you wish to speak, identify their call signs, identifying your own call signs, and, when conversing, indicating when your individual transmissions are completed and the other person can talk. When your radio conversation is over, make sure you clearly give your call letters and signal "Out." If you are moving to a monitoring channel (such as channel 16 on VHF radios), indicate so. A good idea for your own safety, if in a remote location, is to have regular times for transmission and receiving, so as to greatly increase your chances of being heard in case of emergency.

How do I clean the battery terminals?

Cold weather can slow batteries down. Batteries which aren't working can be "warmed" by breathing on them or placing them in a pocket next to your skin before placing them in the radio. Clean the terminals. If you have a little steel wool or abrasive cloth, buff the top and bottom of each battery before putting them in the radio. Too often batteries thought to be dead actually simply have tarnished or dirty contacts.

What about installing spare batteries?

"A prepared outdoorsperson is a live outdoorsperson" one could say. A radio has great power to cover distance, to call for help, to alert friends and family in case of delay. A small item such as one 50¢ battery could mean the difference between a radio saving a life and a radio being dead weight on a trip. Take extra batteries–two sets if you can. You'll be glad you did, and besides, if you can't hail somebody when you need them, extra batteries will help you narrow the problem to the antenna or the radio itself.

What are some ways to emergency signal with the mike?

In some cases, you may be relying on a radio to signal for help and you don't know if you are transmitting or receiving. In other cases, you might be able to receive but not to transmit or you might be able to transmit but not receive. The batteries at the station from which you are transmitting may be weak, those of the receiving station may be weak, or stations may be too far apart for clear communication. One way to get through is to ask questions which would have a yes/no answer, and request that the other party key the mike once for yes, twice for no. You could ask "Are you all right?, please key once for yes, twice for no." Then wait a set number of seconds, say fifteen. Give this alternate form of communication several tries before giving up. More than once a party has been saved or disaster averted by keying the mike.

Manage and Protect the Resource

Managing and Protecting Self-Sufficiency Resources

Teacher Page

Competency: **Manage and protect self-sufficiency resources**

Tasks:

- Identify state and federal self-sufficiency rules and regulations
- Explain procedures for adopting and/or modifying such rules and regulations
- Explain self-sufficiency ethics:
  - a. waste versus need
  - b. using all you take
  - c. leaving animals and plants to reproduce
  - d. minimizing animal suffering
  - e. minimizing human impact
  - f. packing out all refuse
  - g. minimizing resource damage
  - h. staying within carrying capacity of resource
- Explain resource sustainment
- Participate in local fish and game management and/or Native organization(s)
- Identify work of agencies involved with self-sufficiency including:
  - a. Alaska Department of Fish and Game
  - b. Alaska Walrus Commission
  - c. Bureau of Land Management
  - d. U.S. Forest Service
  - e. National Park Service
  - f. Native corporations
  - g. Fisheries Advisory Board
  - h. U.S. Fish and Wildlife Service
  - i. International Whaling Commission
  - j. National Marine Fisheries

Introduction

With increasing pressures on Alaska's resources, Alaska is no longer a place where "anything goes". Federal, state, and borough governments, and Native and other land-management agencies have a real stake in management and protection. Through the seventies and eighties, the development debates have reigned in Alaska. An area gaining particular attention in recent times is that of ethics in harvest. Though by and large those involved in self-sufficient lifestyles fully respect the resource, just about anyone can relate a horror story of someone who doesn't. Trying to understand the issues and agencies involved in protection and management is a challenge that anyone using resources must face.

Overview

The job of managing and protecting self-sufficiency resources typically falls on the government. As such, the jobs involved with that management are those of fish and wildlife protection officer, fish and game technician, park ranger, park technician, fish and wildlife officer, and fish and wildlife biologist. Many of those jobs require a college education, though technician jobs are available. The job of management and protection, is not solely the job of government. Individuals, families, communities and other entities can contribute in a major way to resource management and protection. Knowing ways these non-government individuals and groups can help manage and protect resources may be the key to ensuring their good health.

Suggested Learning Activities

1. Invite representatives of management agencies to class or visit the agencies themselves, to discuss self-sufficiency rules and regulations and their modification, ethics, and the work of the agencies themselves.
2. Study state and federal self-sufficiency rules and regulations.
3. Attend meetings of local fish and game advisory councils - participate! These 21 citizens' advisory councils discuss and recommend measures for fish and game management; their chairpersons form the regional council, which reports to the Boards of Fisheries and Game.
4. Visit the offices of local Native corporations to find out what they do, especially in the areas of subsistence and self-sufficiency.
5. Write a position statement explaining your personal beliefs toward your own lifestyle and your effect on the natural and human resources around you.
6. Read Project Wild: "We're in This Together," p.135; "Who Pays For What?" p. 191; "Pro and Con: Consumptive and Non-Consumptive Uses of Wildlife", p. 33; "Changing Attitudes," p. 165; "Shrinking Habitat,"p. 173; "To Zone Or Not To Zone,"p. 177; "Planning for People and Wildlife", p. 187; "Ethic-thinking," p. 193; "Improving Wildlife Habitat in the Community,"p. 131; "Enviro-ethics," p. 41; "A History of Wildlife Management," p. 155; "Community Attitude Survey," p. 39; "Cabin Conflict," p. 185; "Philosophical Differences," p. 39. "Know Your Legislation," p. 205.

Resources

Bureau of Land Management, 701 C Street, Box 13, Anchorage, AK 99513

Division of Boards, Alaska Department of Fish and Game, P.O. Box 3-2000, Juneau, AK 99811. (907) 465-4110.

Division of Subsistence, Alaska Department of Fish and Game, P.O. Box 3-2000, Juneau, Alaska 99802

National Marine Fisheries Service, 709 W. 9th St., Juneau, AK 99801

National Park Service, Alaska Region, 2525 Gambell St., Anchorage, AK 99503

U.S. Fish and Wildlife Service, Alaska Region, 1101 East Tudor Road, Anchorage, AK 99503

Books:

THE ALASKA ALMANAC, FACTS ABOUT ALASKA , Alaska Northwest Publishing Company, 137 East Seventh Ave., Anchorage, AK 99501, 1988

Managing and Protecting Self-Sufficiency Resources

How do I identify state and federal self-sufficiency rules and regulations?

As stated before, anyone can be self-sufficient in varying ways. Subsistence may be thought of as a subset of self-sufficiency. Both state and federal laws deal with subsistence. The Alaska Department of Fish and Game has a Subsistence Division. Whether or not one qualifies for subsistence uses may be determined by federal laws under the The Alaska National Interest Lands Conservation Act (ANILCA) or under state law. Fish and Wildlife Protection officers can answer questions for both, as can National Park Service rangers and U.S. Fish and Wildlife officers. Specific information about rules and regulations can be obtained from any of the above.

As stated, rules and regulations may vary according to the designation of the area used. For example, as noted in the Alaska Almanac: "Subsistence activities within national wildlife refuges are all protected under the D-2 lands bill. Use of snowmobiles, motorboats and other means of surface transportation traditionally relied upon by local rural residents for subsistence is generally permitted. Aircraft access to wildlife refuges is allowed, and off-road vehicles may be used on special routes and in areas designated by the refuge manager. " (Alaska Almanac, p. 166)

Courtesy of National Rifle Association

What procedures are used for adopting and/or modifying such rules and regulations?

State subsistence laws are implemented by the Alaska Boards of Fisheries and Game. The National Park Service and Fish and U.S. Fish and Wildlife Service have subsistence advisory boards which propose subsistence plans, which, after public comment and review, become policy. All of the above accept written comment from users. Many Alaskans, particularly rural Alaskans are sometimes frustrated by the slow-moving wheels of bureaucracy but policies and laws are mandated and molded by public input. Look in the newspaper, on community bulletin boards, or ask at Native organization offices, or ask Fish and Game biologists or Fish and Wildlife Protection officers the dates and times of such reviews. Additionally, public comments are solicited before laws and policies are enacted, and you can always contact the Alaska Boards of Fisheries and Game or National Park Service even when such reviews are not taking place. Your input is important! Fish and Game Advisory Committees are made up of members from clusters of communities. You can find out the meeting place, time, and location of their meetings through local Fish & Game offices, from Fish and Wildlife Protection officers, or by calling the Division of Boards.

What do self-sufficiency ethics entail?

Self-sufficiency ethics involve moral questions. Should you kill something just because it's there? Should you concern yourself with waste or animal suffering, or whether there's enough for the next person? Should you think about habitat or litter, or whether or not adequate breeding populations have been preserved? Ethics involve personal decisions. The dictionary defines ethics as "any set of moral principles or values or the moral quality of a course of action, fitness, propriety."

How do we teach ethics? How do we make sure to practice them ourselves? Ethics probably involve reminding ourselves that we aren't the only persons in the world, that we are responsible for our actions, that what we do not only affects other people, but affects our habitat as well. Issues of waste versus need, using all you take, leaving animals and plants to reproduce, animal suffering, minimizing human impact, packing out all refuse, minimizing resource damage and staying within carrying capacity of resource are issues with which all of us need to concern ourselves. Unethical resource use might be thought of as a form of vandalism, that is needless destruction. There is a way we can harmoniously utilize Alaska's resources for self-sufficiency. Ethics are a basic foundation of that harmony.

One commonly accepted rule of ethics is knowing what you're shooting at before you shoot and avoiding damage to roads and houses. All over the state roadside property and highway signs are seen plugged full of holes. Such vandalism and expensive malicious conduct creates costs that all of us must pay for, not to mention the bad reputation it brings to hunters. Hunter safety is a part of ethical conduct; too many Alaskans are injured or killed every year by careless gun owners.

Ho can I help sustain our natural resources?

Renewable natural resources are those which can renew themselves, either by seeding or breeding. Resource sustainment means that suitable resources are left unaffected to seed or breed to sustain themselves. Obviously killing or removing (or destroying the habitat for) these "seeders" or "breeders" makes no logical sense. But illogical destruction and shortsightedness never makes logical sense. We must all be diligent, not only in what we affect by our own behavior, but in how we influence decision makers.

How can I participate in local fish and game management and/or Native organization(s)?

There are Fish and Game Advisory Committees established around the state. Members of these Advisory Committees are nominated by communities, then cleared and accepted by the Division of Fish and Wildlife Protection and Boards of Fisheries and Game. The committees review all proposed changes in fish and game regulations. They make recommendations. Citizens may testify before these committees. Their recommendations go to the Boards of Fisheries and Game which establish regulations which are in turn enforced by local, state, and sometimes federal law enforcement officers. Individuals also may testify or submit recommendations directly to the Boards of Fisheries and Game for consideration. The fact that citizen input is crucial in the decision-making process cannot be overstressed. Your input is needed! Ask the local ADF &G biologist, Fish and Wildlife Protection officer, or contact city or village governments or Native organizations. Often local fish and game management or other organizations are in active pursuit of public input. Your contribution can make a difference!

Native organizations, open to Alaska Natives, have elected officers. Every Alaska Native has a stake in their direction.

What about the work of agencies involved with self-sufficiency?

Many agencies deal with self-sufficiency. Local power companies have books and pamphlets on dual heating systems, solar heating and other ways to be self-sufficient in the home. Public libraries in Alaska have numerous books and periodicals discussing home repair, harvesting game, and other such topics. Subsistence can make a strong contribution to self-sufficiency. A number of agencies are involved with self-sufficiency and subsistence. The primary agency is the Alaska Department of Fish and Game, through the Subsistence Division. Some federal land management agencies manage land on which subsistence activities take place. These agencies include the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), National Park Service (NPS), National Marine Fisheries Service (NMFS) and U.S. Forest Service (USFS). Other agencies have different stakes concerning subsistence. Native corporations have a stake in subsistence and self-sufficiency as do agencies such as the Eskimo Whaling Commission, Alaska Walrus Commission, Nunam Kitlutsisti, Rural Alaskans' Resource Association and others. Agencies and organizations pursue policies which promote aims of those they represent. Addresses and phones of many such groups are included in this document. Contact these groups for more information.

Define the Resource

Alaska Natives and Self-Sufficiency

Teacher Page

Competency: **Understand self-sufficiency land use patterns and values of Alaska Native cultures**

Tasks:
Explain Alaska Native religious beliefs, including animism, the role of nature, and totems
Explain the role of natural occurrences, like fire, flood, and earthquakes
Explain therole of social interaction with neighboring societies, including the roles of trade and profit
Identify the roles of Native management organizations, especially Native and village corporations, the Alaska Eskimo Whaling Commission (AEWC), Eskimo Whaling Commission (EWC),Caribou, and the Rural Alaska Resources Association (RARA)

Introduction

Alaska Natives are identified with subsistence, though not necessarily by law. Though the Alaska State Legislature in 1978 enacted the state subsistence law and the Alaska Department of Fish and Game (ADF & G) in 1981 set out eight criteria by which to identify subsistence user, the 1985 *Madison* decision stated that this latter interpretation had been illegal. The court essentially put all Alaskans in the subsistence category. In situations where all residents who want to hunt cannot be allowed to hunt because of limited game, the following criteria are used to determine who may use the resource: 1) customary and direct dependence upon the resource as the mainstay of one's livelihood; 2) local residence; and 3) availability of alternative resources. An involved tier system was then instituted. (See ADF & G for more information.) However the court interprets it, Alaska Natives have subsisted self-sufficiently for thousands of years. Some knowledge of Native customs, traditions and management organizations will help to understand the complex interactions of humankind with the resource.

Overview

In regards to self-sufficiency, many Native organizations, commissions and other entities have staffs dedicated to subsistence. A subsistence lifestyle differs from a self-sufficient lifestyle in that anyone can be self-sufficient. Subsistence is handed down from generation to generation. Specialists in issues related to subsistence are a part of many of these organizations, either full-time or on contract.

Suggested Learning Activities

1. Invite local Native elders, anthropologists to class to talk about traditional beliefs about the natural world and that of the spirits.
2. Interview local elders to record some of the stories and legends explaining the workings of the natural world. Write down their stories and compile a book of their lore.
3. Read historical accounts of local Native spiritual beliefs and other traditional stories and legends. Choose one story as the subject of a play. Write the play; practice, and perform it.
4. Write to the Alaska Eskimo Whaling Commission, the Eskimo Walrus Commission, the International Whaling Commission, and the National Marine Fisheries Service to find out how well the management of whales and walrus is succeeding as federal and Native groups continue to work together.
5. Alaska Wildlife Notebook Series and Alaska Wildlife Notebook Series Activities Guide for Teachers; Coyote story dramatizations, p. 31; Seal bladder festival simulation, p. 66.
6. Contact the Alaska State Museum to obtain traveling multimedia kits and publications on Tlingit stories, monsters in myth and legend, whales, and Eskimo stories. Kits contain hands-on materials and activities suitable for all grade levels.

Resources

Alaska Eskimo Whaling Commission, P.O. Box 570, Barrow, AK 99723

Alaska Federation of Natives, 411 West Fourth Avenue, Suite 1-A, Anchorage, AK 99501

Alaska Native Foundation, 411 West Fourth Avenue, Suite 314, Anchorage, AK 99501

Alaska State Museum, 395 Whittier Street, Juneau, Ak. 99801. *Excellent multi-media kits and publications available on a variety of topics , with materials and activities suitable for all grade levels. 465-2901.*

Beverly and Kaminvriak Caribou Management Board, Box 250, Ashton, Ontario KOA 1B0 Canada

Central Council of Tlingit and Haida Indian Tribes of Alaska, One Sealaska Plaza, Suite 200, Juneau, AK 99801

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802

Fairbanks Native Association, Incorporated, 310 First Avenue, Fairbanks, AK 99701

Interior Village Association, 127 1/2 Minnie Street, Fairbanks, AK 99701

Nunam Kitlutsisti, P.O. Box 2068, Bethel, AK 99559 (907) 543-2856-*The environmental and research arm of the Association of Village Council Presidents, the official representative body for the fifty-six Native villages of Alaska's Yukon-Kuskokwim Delta region.*

Rural Alaska Resources Association (RARA), c/o RURALCAP, P.O. Box 200908, Anchorage, AK 99520—*Newsletter dealing with subsistence issues.*

Books and Magazines:

Alaska's Native People, edited by Lael Morgan, Alaska Northwest Publishing Company, 137 East Seventh Ave., Anchorage, AK 99501

Caribou News, Suite 200, 16 Concourse Gate, Nepean, Ontario K2E 7S8 Canada

Books and Videos:

Alaska's Native People, Alaska Northwest Publishing Company, Box AA88, 130 Second Avenue South, Edmonds, WA 98020

The Native People of Alaska, by Steve J. Langdon, Greatland Graphics, Anchorage, 1987.

Inua, Spirit World of the Bering Sea Eskimo, Fitzhugh and Kaplan, Smithsonian Institution Press, Washington, DC, 1982.

Raven's Journey, The World of Alaska's Native People, Susan Kaplan and Kristin J. Barsness, University Museum, University of Pennsylvania, 1986. *This book contains a number of examples of Alaska Native art.*

The Roots of Ticasuk, An Eskimo Woman's Family Story, Alaska Northwest Publishing Company, Box AA88, Edmonds, WA 98020 *Native history at its best.*

"Tales of the Tundra," 30 minute VHS video, 1985. *Available through the Alaska State Film Library or from KYUK Video Productions, Pouch 468, Bethel, AK 99559 (907) 543-3131. Four traditional Yup'ik Eskimo storytellers explore the legends of southwest Alaska.*

"A Video for All Seasons, 1985," 60 minute VHS video, 1985. *Available through the Alaska State Film Library or from KYUK Video Productions, Pouch 468, Bethel, AK 99559 (907) 543-3131. Includes dip net fishing in Nunapitchuk, wildlife footage from the Yukon Delta Wildlife Refuge and the 1985 breakup flood in Bethel.*

Native Regional Corporations:

Ahtna Incorporated (Copper River Basin), Drawer G, Copper Center 99673
Aleut Corporation (Aleutian Islands), 425 G St., Suite 840, Anchorage, AK 99501
Arctic Slope Regional Corporation (Arctic Alaska), P.O. Box 129, Barrow, AK 99723
Bering Straits Native Corporation (Seward Peninsula), P.O. Box 1008, Nome, AK 99762
Bristol Bay Native Corporation (Bristol Bay area), P.O. Box 198, Dillingham, AK 99576 or P.O. Box 100220, Anchorage, AK 99510
Calista Corporation (Yukon-Kuskokwim Delta), P.O. Box 408, Bethel, AK 99559 or 516 Denali Street, Anchorage, AK 99501
Chugach Alaska Corporation (Prince William Sound), 3000 A Street, Suite 400, Anchorage, AK 99503
Cook Inlet Region, Incorporated (Cook Inlet region), 2525 C Street, Suite 500, Anchorage, AK 00503
Doyon, Limited (Interior Alaska), 201 First Avenue, Suite 200, Fairbanks, AK 99701
Koniag, Incorporated (Kodiak area), 201 Kashavaroff St., Suite 6, Kodiak, AK 99615
NANA Corporation (Kobuk region), P.O. Box 49, Kotzebue, AK 99752
Sealaska Corporation (southeastern Alaska), One Sealaska Plaza, Juneau, AK 99801
Thirteenth Regional Corporation (outside Alaska), 13256 Northup Way, Suite 12, Bellevue, WA 98005

Regional Nonprofit Corporations:

Aleutian-Pribilof Islands Association, Incorporated (Aleut Corporation), 1689 C Street, Anchorage, AK 99501
Association of Village Council Presidents (Calista Corporation), P.O. Box 219, Bethel, AK 99559
Bristol Bay Native Association (Bristol Bay Native Corporation), P.O. Box 237, Dillingham, AK 99756
Central Council of Tlingit-Haida Indian Tribes (Sealaska Corporation), One Sealaska Plaza, Suite 200, Juneau, AK 99801
Cook Inlet Native Association (Cook Inlet Region, Incorporated), 670 West Fireweed Lane, Anchorage, AK 99503
Copper River Native Association (Arctic Slope Regional Corporation), P.O. Box 437, Barrow 99723
Inupiat Community of the Arctic Slope (Arctic Slope Regional Corporation), P.O. Box 437, Barrow, AK 99723
Kawerak, Incorporated (Bering Straits Native Corporation), P.O. Box 948, Nome, AK 99762
Kodiak Area Native Association (Koniag, Incorporated), P.O. Box 172, Kodiak, AK 99615
Maniilaq (formerly Mauneluk) Association (NANA Regional Corporation), P.O. Box 256, Kotzebue, AK 99752
North Pacific Rim Native Association (Chugach Alaska Corporation), 3000 A Street, Suite 400, Anchorage, AK 99503
Tanana Chiefs Conference (Doyon Limited), 201 First Avenue, Fairbanks, AK 99701

Other Native Organizations

Alaska Eskimo Whaling Commission, P.O. Box 570, Barrow, AK 99723
Alaska Federation of Natives, 411 West Fourth Avenue, Suite 1-A, Anchorage, AK 99501
Alaska Native Brotherhood, P.O. Box 112, Juneau, AK 99801
Alaska Native Foundation, 411 West Fourth Avenue, Suite 314, Anchorage, AK 99501
Central Council of Tlingit and Haida Indian Tribes of Alaska, One Sealaska Plaza, Suite 200, Juneau, AK 99801
Fairbanks Native Association, Incorporated, 310 First Avenue, Fairbanks, AK 99701
Interior Village Association, 127 1/2 Minnie Street, Fairbanks, AK 99701
Inuit Circumpolar Conference, Barrow, AK 99723
Yupiktat Bista (a branch of the Association of Village Council Presidents), Bethel, AK 99559

Native Village Corporations

In addition to the 12 regional corporations managing money and land received as part of the Alaska Native Claims Settlement Act, eligible Native villages were required to form corporations and to choose lands made available by the settlement act by December 1974. The 203 Native villages which formed village corporations eligible for land and money benefits are listed under their regional corporation.

Ahtna Incorporated: Cantwell, Chistochina, Chitina, Copper Center, Gakona, Gulkana, Mentasta Lake, Tazlina.
Aleut Corporation: Akutan, Atka, Belkofski, False Pass, King Cove, Nelson Lagoon, Nikolski, Saint George, Saint Paul, Sand Point, Unalaska, Unga.

Arctic Slope Regional Corporation: Anaktuvuk Pass, Atkasook, Barrow, Kaktovik, Nuiqsut, Point Hope, Point Lay, Wainwright

Bering Straits Native Corporation: Brevig Mission, Council, Golovin, Inalik/Diomede, King Island, Koyuk, Marys Igloo, Nome, Saint Michael, Shaktoolik, Shishmaref, Stebbins, Teller, Unalakleet, Wales, White Mountain

Bristol Bay Native Corporation: Aleknagik, Chignik, Chignik Lagoon, Chignik Lake, Clarks Point, Dillingham, Egegik, Ekuk, Ekwok, Igiugig, Iliamna, Ivanof Bay, Kokhanok, Koliganek, Levelock, Manokotak, Naknek, Newhalen, New Stuyahok, Nondalton, Pedro Bay, Perryville, Pilot Point, Portage Creek, Port Heiden, South Naknek, Togiak, Twin Hills, Ugashik

Calista Corporation: Akiachak, Akiak, Alakanuk, Andreafsky, Aniak, Atmautluak, Bethel, Bill Moores, Chefornak, Chevak, Chuathbaluk, Chuloonwick, Crooked Creek, Eek, Emmonak, Georgetown, Goodnews Bay, Hamilton, Hooper Bay, Kasigluk, Kipnuk, Kongiganak, Kotlik, Kwethluk, Kwigilingok, Lime Village, Lower Kalskag, Marshall, Mekoryuk, Mountain Village, Napaimiute, Napakiak, Napaskiak, Newtok, Nightmute, Nunapitchuk, Ohogamiut, Oscarville, Paimiut, Pilot Station, Pitkas Point, Platinum, Quinhagak, Red Devil, Russian Mission, Saint Marys, Scammon Bay, Sheldons Point, Sleetmute, Stony River, Toksook Bay, Tuluksak, Tuntutuliak, Tununak, Umkumiut, Upper Kalskag.

Chugach Natives, Incorporated: Chenaga, English Bay, Eyak, Port Graham, Tatitlek.

Cook Inlet Region, Incorporated: Chickaloon, Knik, Eklutna, Ninilchik, Seldovia, Tyonek.

Doyon Limited: Alatna, Allakaket, Anvik, Beaver, Bettles Field, Birch Creek, Chalkyitsik, Circle, Dot Lake, Eagle, Fort Yukon, Galena, Grayling, Healy Lake, Holy Cross, Hughes, Huslia, Kaltag, Koyukuk, Manley Hot Springs, McGrath, Minto, Nenana, Nikolai, Northway, Nulato, Rampart, Ruby, Shageluk, Stevens Village, Takotna, Tanacross, Tanana, Telida

Koniag, Incorporated: Afognak, Akhiok, Kaguyak, Karluk, Larsen Bay, Old Harbor, Ouzinkie, Port Lions, Woody Island

NANA Regional Corporation, Incorporated: Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik, Shungnak

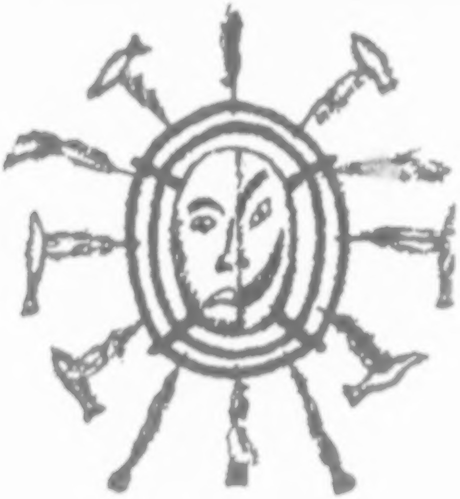
Sealaska Corporation: Angoon, Craig, Hoonah, Hydaburg, Kake, Kasaan, Klawock, Saxman, Yakutat

Alaska Natives and Self-Sufficiency

What are some Alaska Native religious beliefs, including animism, the role of nature, and totems?

A knowledge of Alaska Native religious beliefs may help the natural resources student understand Alaskan human history. Much of the debate related to subsistence, resource use, and Native issues in Alaska has a basis in the history of Native use of the resource, the history of Euro-American immigration, the history of the Alaska purchase, and the recent history of oil development and a quick scramble for resources.

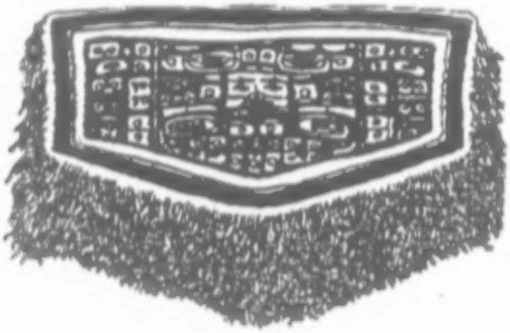
Of the **Aleut** people, Steve Langdon writes, "Although little is known of the Aleut belief system, they appear to have conceived of a creator deity related to the sun who was instrumental in hunting success and the reincarnation of souls. Small images of the creator, known as *kaathaagaathagh*, were carved from ivory and hung from the ceiling beams (Laughlin, 1980). The creator, however, had little impact on everyday life which was instead influenced by two classes of spirits, good and evil. Animals also had spirits. The most important ones were those of the whale and sea otter. Aleut men wore a variety of amulets and charms that were thought to provide special powers from the animal spirits to enhance success in hunting. The Aleuts believed in the reincarnation of souls which migrated between the earth, a world below and a world above. " (The Native People of Alaska, p. 19)



Of the **Iñupiat**, Langdon continues, "The Inupiat belief system appears to have been based on the principle of reincarnation and the recycling of spirit forms from one life to the next. This was true of both the human and animal worlds. Names of those who had recently died would be given to newborn infants. Animal spirits were seen as critical for only if they were released could the animal be regenerated and return for future human harvest. Consequently, a great number of special behaviors were accorded various animals including offering marine mammals a drink of freshwater, cutting the throats or skull to release the spirit, and taking care to make maximum use of the products. If the special behaviors were not faithfully carried, the animals might not make themselves available again. Shamans had a special place in Inupiat society as curers and forecasters of weather and future events." (The Native People of Alaska, p. 33)

Of the **Yup'ik** (Yuit) peoples, Langdon says, " Yuit religious belief systems were heavily influenced by two basic notions. The first of these was that human success in hunting depended on maintaining a positive relationship between people and the spirits of the animals hunted. Amulets, taboos and other ritual activities were designed to show respect to those animal spirits in order to ensure continued availability. The second principle was that of reincarnation or the cycling of life. It was believed that human spirits were recycled into life through birth and naming. Those who had not been reborn lived in the underground but occasionally could appear above ground. It was necessary to be vigilant and not to offend these spirits since they could bring harm." ((The Native People of Alaska, p. 43)

He says of **Athabascan** people, "Athabascan beliefs about and relationships with the supernatural involved several important principles. A critical set of beliefs revolved around the indistinguishability between men and animals in the distant past. Both have spirits and in the past they communicated directly with each other. These ancient relationships had been transformed by the acts and antics of Raven, a culture hero and trickster who constantly disrupted the moral order by deception. The legend cycle told in stories to Athabascan children is composed of tales concerning the activities of Raven, along with other mythical beings which exemplify concepts of right and wrong in Athabascan culture." ((The Native People of Alaska, p. 57)



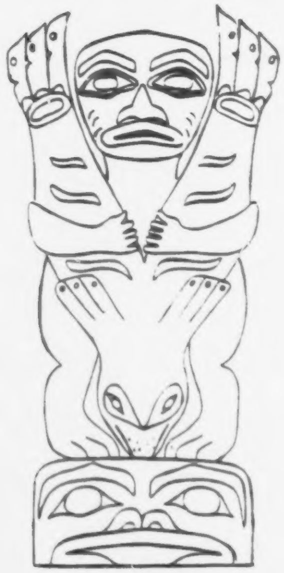
Of the **Tlingit** and **Haida** peoples Langdon writes, "the belief systems of both the Tlingit and Haida were linked to the Raven, a supernatural trickster through whose activities most of the universe's features came to be. Other animals were also important as actors in Tlingit and Haida myth and legend; particularly important were bears, the Thunderbird and a variety of other mythical beings and spirits whose acts influenced human affairs. Both cultures had a strong belief in reincarnation which was identified by dreams and physical or behavioral similarities of new born children to some recently deceased person. The shaman (Tlingit–*ixt)* was a powerful personage in both societies as a communicator with powerful spirits, curer and foreteller of future events. Shamans were thought to travel great distances to see events in other communities and do battle with other shamans. They were well-paid specialists who had apprentices to assist them." ((The Native People of Alaska, p. 71)

What is the role of natural occurrences, like fire, flood, and earthquakes in regards to Native self-sufficiency?

It is hard to generalize about natural occurrences in regards to self-sufficiency. One truth, however, is that Native people, like people and cultures everywhere, have never been and will probably never be stagnant and stationary in their practices and beliefs. Their ways evolve just as the ways of other people around the world evolve. Sometimes natural occurrences such as the ice age, the search for game and other resources, floods, earthquakes, fires, or pressure from other people caused (and cause) Native people to move, to migrate. Theories state that Native people migrated to North America via the long-submerged Bering Land Bridge between Siberia and Alaska. Such a migration was probably a search for better hunting, and better gathering. Similar quests brought the Tlingit people to the coasts from what is today Canada's interior, and in more recent times, political and other reasons brought the Tsimshian people to Annette Island, on Alaska's panhandle. Native people have adapted to natural occurrences, just as they have adapted to other occurrences, just as they are adapting today. The pace of change in the role and nature of subsistence and self-sufficiency has quickened in recent years. Land designation, development, population increase, and laws have affected subsistence and self-sufficiency perhaps more powerfully than natural forces in times past. Responding to those changes and controlling their own destiny is perhaps the greatest challenge for Natives and subsistence and self-sufficiency resource users.

What is the role of social interaction with neighboring societies, including the roles of trade and profit?

Those with some knowledge of the history of Native cultures in Alaska know that trade and other interactions with "outsiders" is nothing new. Early French, Russian and Euro-American explorers noted that Tlingit Indians had metal and in some cases, working firearms for which they had traded, via a long trade route, from other Native people. Trade is nothing new to Alaska's Native people, nor is change. A tenet of culture might be that cultures always change and are always changing.



What are the roles of Native management organizations?

As noted in the Alaska Almanac, "twelve regional business corporations were formed under the 1971 Alaska Native Claims Settlement Act to manage money and land received from the government. A thirteenth corporation was organized for those Natives residing outside Alaska." (Alaska Almanac, p. 170) These corporations manage Native lands and other Native assets. They are involved in managing use of Native lands such as logging and mining. They are parallel to other corporations elsewhere, though they manage land and resources.

As the Alaska Almanac continues: "In addition to the 12 regional corporations managing money and land received as part of the Alaska Native Claims Settlement Act, eligible Native villages were required to form corporations and to choose lands made available by the settlement act by December 1974. " (Alaska Almanac, p. 171) 203 Native villages formed village corporations, which are, in turn, associated with various regional corporations. These village corporations manage the lands they selected. As such, some are involved in logging, mining, reindeer herding or even tourism.

Other organizations advocate the Native position on resource issues. The Alaska Eskimo Whaling Commission (AEWC), Eskimo Walrus Commission (EWC) promote subsistence use of marine mammals. Whales do not respect international boundaries. The International Whaling Commission (IWC), of which the United States takes part, mandates the management of whales. The AEWC deals with the IWC to see that traditional Eskimo use of whales is maintained. The Alaska Walrus Commission takes a similar stance regarding walrus. By federal law, marine mammals fall under the management of the National Marine Fisheries Service (NMFS), a federal agency. These Native organizations deal directly with these national and international agencies as well as to inform and support Native involvement in decision-making regarding marine mammals.

Caribou, a Canadian organization, advocates subsistence issues throughout western Canada.

Land Ownership and Management

Teacher Page

Competency: **Understand issues of land ownership and management**

Tasks: Explain land ownership and management issues related to:

a. Alaska statehood
b. Alaska Native Claims Settlement Act (ANCSA)
c. The Alaska National Interest Lands Conservation Act (ANILCA)
d. Bureau of Land Management (BLM)
e. Department of Agriculture
f. Department of the Interior
g. The Alaska purchase
h. Native and village corporations
i. Native allotments
j. Fish and Wildlife Service
k. State land selections

Introduction

One of the topics in the forefront for decades in Alaska has been land ownership and management. For nearly a hundred years after the Alaska purchase the territory lingered seemingly unnoticed, until the discovery of oil on the North Slope. The ensuing Alaska Native Claims Settlement Act (ANCSA) and The Alaska National Interest Lands Conservation Act (ANILCA) drew lines and boundaries over much of the state. Today the state is a patchwork of designations and management areas. Some of the boundaries follow natural boundaries, others political realities.

Overview

A number of jobs either directly or indirectly relate to land ownership and management. The Bureau of Indian Affairs deals with Native allotments. Native corporations are major land managers. The Bureau of Land Management is a land management agency, and the state Department of Natural Resources is similarly involved in a host of management issues. Jobs related to land management include urban and regional planners, business administration posts, geographers, cartographers, and those involved with public administration. Other related jobs might include park ranger, and resource managers. In the private realm, realtors are typically associated with land management and ownership.

Suggested Learning Activities

1. Invite representatives from local Native corporations, the BLM, the U.S. Forest Service, and the U.S. National Park Service to explain the history of the ANILCA lands and their management. Which nearby lands are managed for minerals, logging, other development, subsistence? Find out how it is working, from the perspective of agencies and people involved.
2. Draw a neatly-labelled color map or poster OR build a 3-D papier mache relief map showing major land owners (such as Native corporations) and managers in Alaska today.
3. Research the D-2 clause of ANCSA to find out why it was so controversial for the U.S. Government to propose expanding parks and wilderness areas in Alaska in the 1970's. Conduct a role play of Senator Seiberling's traveling Subcommittee hearings in your town (which were meant to inform U.S. congressmen of how Alaskans received the pending legislation). Some students may act in the role of Alaska Representative Don Young and other congressmen; other students may play local citizens expressing varying opinions and positions regarding how the D-2 lands should have been used.

Resources

Alaska State Parks, Department of Natural Resources, Division of Parks and Outdoor Recreation, 3601 'C' Street, P.O. Box 107001, Anchorage, AK 99510-7001

Bureau of Indian Affairs, 1675 C Street, Anchorage, AK 99501. (907) 271-4088

Bureau of Land Management, 701 C Street, Box 13, Anchorage, AK 99513

Department of Natural Resources, State of Alaska, 400 Willoughby Ave., Juneau, AK 99801

National Park Service, Alaska Region, 2525 Gambell St., Anchorage, AK 99503

U.S. Forest Service, Chugach National Forest, 201 East Ninth Avenue, Suite 206, Anchorage, AK 99501

U.S. Forest Service, Tongass National Forest, P.O. Box 21628, Juneau, AK 99802-1628

Books:

Alaska Almanac, 137 East Seventh Avenue, Anchorage, AK 99501

Alaska National Interest Lands, Alaska Northwest Publishing Company, Box AA88, 130 Second Avenue South, Edmonds, WA 98020, 1981. *A bit outdated today, but a good background text for the D-2 clause of ANCSA.*

Land Ownership and Management

What are some land ownership and management issues related to the topics listed below?

The Alaska purchase in 1867 was termed "Seward's Folly." Alaska was seen as a land of snow and ice, hardly worth the $7,000,000 paid to the Russians. The territory then remained with minimal government and limited land designations, except for the establishment of Mt. McKinley, Katmai and Glacier Bay, the Tongass and Chugach National Forests in the early part of the century–until the Alaska Native Claims Settlement Act (ANCSA) of 1971 and the Alaska National Interest Lands Conservation Act (ANILCA) of 1980.

Until that time, and for federal land outside of national parks, monuments, refuges, and forests, the Bureau of Land Management (BLM) was and is responsible for the management of these enormous land resources in Alaska. As the BLM states, "Alaska's 378 million acres were purchased by the federal government from Russia in 1867 for about two cents an acre. Most of this land was at one time administered by the BLM or predecessor agencies. Land–who owns it, who gets it and who can use it. These are the issues that the BLM must deal with every day." The BLM today administers some 270 million acres of public lands nationwide. Of those 270 million acres, 80 million are in Alaska.

Statehood in 1959 changed the status of land in Alaska. Statehood brought an entitlement to the state of 42.9 million hectares (106 million acres) of public lands potentially rich in oil and gas, minerals and coal which it could select for its own purposes. Selection of those lands has taken time. The state has been in the process of selecting those federal lands for its own use since statehood. The state uses that selected land for homesites, resource development, deeds to city/boroughs, establishment of state parks and forests, and other uses. Such state land selections are ongoing. The pace of the selections has been much slower than originally envisioned. News reports of pending state land selections are often seen in Alaskan newspapers.

Exactly which lands the state selects and what the state does with those lands is much in discussion. Alaska's land will continue to be a subject of much discussion. Implementation of the D-2 issue (of ANCSA) and distribution of land to the Native village and regional corporations, the state of Alaska and private citizens in the state will require time.

The Alaska Native Claims Settlement Act (ANCSA) of 1971 brought nearly 18 million hectares (44 million acres) of federal land and and more than $962 million in settlement of native claims to land. The act created Alaska Native village and regional corporations. Twelve regional business corporations manage money and land received from the federal government. A thirteenth corporation was organized for those Alaska Natives who reside outside of the state of Alaska.

The Alaska National Interests Lands Conservation Act (ANILCA) of 1980 established ten new units of the National Park Service, added lands to seven national wildlife refuges, and created nine new national wildlife refuges in Alaska. The act also extended wilderness protection to large areas and established Admiralty Island and Misty Fiords National Monuments under the U.S. Forest Service.

Though the U.S. Department of Agriculture contributes in a large way to agricultural programs at the University of Alaska, and the Cooperative Extension Service, the most prominent USDA agency in Alaska is the U.S. Forest Service. Alaska has two national forests–the Tongass and the Chugach National Forests. Virtually all of Southeast Alaska lies within the Tongass National Forest–except the cities. The coastal area due east of Anchorage lies within the boundaries of Chugach National Forest. Tongass National Forest is the largest national forest in the nation. The issue of logging in the Tongass has been a hotly debated environmental issue. Large areas in the Tongass were set aside as wilderness in 1980, but environmental groups have called for more protection and repeal of mandatory annual timber cuts. Protectors of the Tongass logging industry cried that greater environmental protection would eliminate jobs.

The U.S. Department of Interior has several agencies of significance in Alaska. First of all, the Bureau of Land Management (BLM) is the largest single land-managing agency in the state. The BLM in Alaska manages more land than many nations contain–over 80 million acres. Secondly, under the Department of the Interior, the U.S. Fish and Wildlife Service manages more than 76 million acres in the state. Thirdly, under the U.S. Department of Interior in Alaska is the National Park Service (NPS). Like the BLM, but with a different purposes, the NPS manages some 20 million hectares (51 million acres), or 13 percent of the state's 151 million hectares (375 million acres).

Native allotments allow Natives, under the allotment act, to apply for and receive up to 160 acres of vacant and unappropriated federal land if they could demonstrate exclusive use of the land for parts of five consecutive years. That use could be commercial fishing, hunting, trapping or berry picking. The allotment program lapsed with passage of the Alaska Native Claims Settlement Act in 1971. The age of applicants can have a bearing on whether or not Native allotments are approved. For example, in a recent case, fifteen Kenai-area Natives claimed 18 parcels and were denied because the applicants were not old enough to claim personal exclusive use of the land sought. Applications for Native allotments are made to the Bureau of Land Management.

Understand the Importance of the Resource

The Importance of Alaska's Self-Sufficiency Resources
Teacher Page

Competency:	**Understand the importance of Alaska's resources used for self- sufficiency**
Tasks:	Explain the commercial value of Alaska's self-sufficiency resources Explain the non-commercial value of Alaska's self-sufficiency resources Explain aesthetic and human values represented by Alaska's self-sufficiency resources Explain cultural values represented by Alaska's self-sufficiency resources Explain the value of self-sufficiency resources in terms of stability of Alaskan ecosystems

Introduction

Alaskan resources used for self-sufficiency have real value. They provide high-energy protein, they help maintain culture, and they make the state interesting and unique. Other values include family cohesion, maintenance of traditional values, and "the fundamental basis of psychological and emotional well being of persons within the village society," as noted by the Alaska Department of Fish and Game. Subsistence resources, combined with other self-sufficient efforts represent over 40 million pounds of foodstuffs annually for rural Alaskans, not to mention clothing, shelter, fuel, and other amenities. Urban Alaskans also supplement their livelihoods in self-sufficient ways through natural resources.

Overview

Alaska's self-sufficiency resources will continue to play a strong role in the state's economy. With large areas of the state set aside as parks, refuges and wilderness areas, not to mention strong traditions of Alaska's Native and non-Native people, self-sufficiency resources will continue to play an important role in the state's economy. As such, providing food and fiber for personal use will continue to be important to Alaskans in the years to come.

Suggested Learning Activities

1. Make a map of Alaska and point out location of self-sufficiency resources.
2. Make a chart showing the importance of subsistence in the Alaskan economy.
3. Make a scrapbook highlighting articles about self-sufficiency.

Resources

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802.

Nunam Kitlutsisti, P.O. Box 2068, Bethel, AK 99559 (907) 543-2856-*The environmental and research arm of the Association of Village Council Presidents, the official representative body for the fifty-six Native villages of Alaska's Yukon-Kuskokwim Delta region.*

Rural Alaska Resources Association, c/o RURALCAP, P.O. Box 200908, Anchorage, AK 99520. *Newsletter dealing with subsistence issues.*

Magazines, Videos and Films:

"The Role of Fisheries in the Alaska Economy," Alaska Fish & Game Magazine, January-February, 1988, pp. 4-11.

"Let's Eat," 20 minute VHS video, 1985. *Available through the Alaska State Film Library or from KYUK Video Productions, Pouch 468, Bethel, AK 99559 (907) 543-3131. Three-part series examining the effect of Western foods on the health of Native Alaskans in the southwest portion of the state. Length: 12-15 minutes each*

The Importance of Alaska's Self-Sufficiency Resources

What is the commercial value of Alaska's self-sufficiency resources?

In 1985 the total annual statewide rural harvest of food was estimated to be about 40.3 million pounds of food, or about 354 pounds per person in rural areas. That amount of subsistence food consumed in rural Alaska exceeds what the average American eats; the U.S. average consumption of domestic meat, fish, and poultry is about 255 pounds per person each year. ("The Role of Fisheries in the Alaska Economy") That figure represents just the foodstuffs, and the subsistence use. Not only do natural resources used for self-sufficiency have a tangible value in Alaska, but their value is worth millions of dollars. If you add in the value of other self-sufficiency resources such as wild medicinals, clothing, and decorative items, the value increases even more.

What about the non-commercial value of Alaska's self-sufficiency resources?

Self-sufficiency brings commercial and non-commercial forces together. Subsistence allows a person to make a living apart from the cash economy. Self-sufficiency, providing for human needs outside of the cash economy, has a commercial value in itself because any money you save providing for yourself outside of the cash economy means that much more of your cash is available for other purposes.

Other non-commercial values might include doing something because you like it. You might pick berries, harvest game, or fish for your family because you want to, and you might do it because you like it.

What about aesthetic and human values represented by Alaska's self-sufficiency resources?

For the subsistence user, with use of the resource being handed down, subsistence use may represent family, cultural, or religious values. For example, the taking of whales in Point Hope, Point Ley or Barrow represents far more than just consumption of food in those communities. The whale hunt represents a way of life because the community is involved in the taking and using of the animal. Similarly, those who are self-reliant in other ways, for example, in growing a garden or in raising animals for meat, may have an attachment to their avocation which extends beyond the simple act itself. The right and capability to pursue that lifestyle are at stake.

What is the significance of the cultural values represented by Alaska's self-sufficiency resources?

Subsistence differs from "self-sufficiency" in that subsistence involves activities which are customary and traditional. Virtually anyone can participate in some sort of self-sufficiency activity, though of course the *Madison vs. ADF & G* modified rules as to what qualifies as subsistence.

Subsistence has significant meaning to Native Alaskans and to others in the state. As the Alaska Department of Fish and Game writes, "customary and traditional subsistence activities commonly are an important basis for the social order in many rural areas as well as forming an important non-monetary part of the economy. Activities of the family are often centered around the annual cycle of subsistence harvesting and processing. Primary social roles revolve around subsistence: commonly harvesting by males, processing by females, support roles for children and the very elderly. The family is integrated by the enactment of these traditional roles, entailing a mutual sharing of knowledge, labor, and material goods. Similarly, the community itself is commonly integrated through subsistence activities and the distribution and sharing of subsistence foods. Subsistence foods commonly are widely shared among households in the community, providing social support and welfare to the elderly, the young, and others unable to support themselves." ("The Role of Fisheries in the Alaska Economy, pp. 5-6)

What is the value of self-sufficiency resources in terms of Alaskan ecosystem stability?

What is an ecosystem? The dictionary says that an ecosystem is "an ecological community together with its physical environment, considered as a unit." Alaska's self-sufficiency resources have value other than for human use. They have value in terms of ecosystems. Take moose for example. Moose have value to those who hunt moose, but moose also have value to the overall ecosystem, providing food for predators. Protection of resources for subsistence or for the self-sufficient uses of Alaskans benefits the resource as a whole.

The value of protecting those resources for subsistence and self-sufficient uses sometimes competes with development for economic uses. The issue of development of the Arctic National Wildlife Refuge (ANWR) and other areas, important for subsistence needs, important for ecosystem protection, and potential site for oil production is a good example.

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Economic Role of Self-Sufficiency

Teacher Page

Competency: **Understand the economic role of self-sufficiency in the Alaskan economy**

Tasks:

Describe the economic importance of self-sufficiency in the village economy
Describe the economic importance of viable village economies to the Alaska economy
Identify costs of self-sufficiency on the Alaska economy
Describe sharing and distribution networks

Introduction

An area that is not usually examined when talking of subsistence or self-sufficiency is the role it plays in the Alaskan economy. As the Alaska Department of Fish and Game notes, subsistence supplies over 40.3 million pounds of food annually in rural areas. High in protein and low in fat many of the same foodstuffs commercially worth 50¢ or so a pound for potatoes to nine or ten dollars a pound for smoked salmon, that resource represents a whopping force in the Alaskan economy. Those estimates are for subsistence (customary and traditional uses of wild resources as food, material, customary sharing and local uses) in *rural* areas. What about those who use other natural resources for self-sufficiency or those who live in urban areas who supplement their diet with fish, wild game, berries, or other natural resources? Just by considering all those uses one can see that natural resources used for self-sufficiency are a major force in the Alaskan economy.

Overview

There are several ways to look at the overview in "employment" or "occupation" in relation to resources used for self-sufficiency or subsistence. There are those who support themselves either fully or partially in subsistence or self-sufficient lifestyles, and those whose profession is to regulate, study, or manage the resources being used. Such jobs–for state and federal governments should not be overlooked; for too long the job of regulating resources in rural communities has fallen to outsiders. Affirmative action and local hire programs as well as volition on the part of rural people can help get rural Alaskans and other resource *users* into those jobs. Additionally, Native organizations, private groups and scientific entities hire technicians, biologists, administrators and managers who study and oversee these resources, either contracting with, supplementing, or providing independent studies for governments. All the above benefit economically from the subsistence (or self-sufficiency) resource.

Suggested Learning Activities

1. Interview a local subsistence user about the importance of self-sufficiency in his or her life.
2. Keep a ledger on approximate dollar values of self-sufficiency contributions to the students' family.
3. List ways that self-sufficiency resources could help the student's family economically–and improve their diet.
4. Alaska Wildlife Notebook Series and Alaska Wildlife Notebook Series Activities Guide for Teachers: Collect data and prepare graphs showing the economic value of the brown bear, p. 5.

Resources

Alaska Eskimo Whaling Commission, P.O. Box 570, Barrow, AK 99723

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802

Eskimo Walrus Commission, P.O. Box 948, Nome, AK 99762

International Whaling Commission, The Red House, Station Road, Histon, Cambridge, CB4 4NP, England, U.K. *International agency which regulates whale harvest and conservation.*

National Marine Fisheries Service, 709 W. 9th St., Juneau, AK 99801

National Park Service, Alaska Region, 2525 Gambell St., Anchorage, AK 99503

Nunam Kitlutsisti, P.O. Box 2068, Bethel, AK 99559 (907) 543-2856-*The environmental and research arm of the Association of Village Council Presidents, the official representative body for the fifty-six Native villages of Alaska's Yukon-Kuskokwim Delta region.*

Rural Alaska Resources Association, c/o RURALCAP, P.O. Box 200908, Anchorage, AK 99520. *Newsletter dealing with subsistence issues.*

Books and Magazines:

Alaska's Native People, Alaska Northwest Publishing Company, 137 East Seventh Ave., Anchorage, AK 99501, 1988

Alaska Whales and Whaling, Alaska Northwest Publishing Company, 137 East Seventh Ave., Anchorage, AK 99501, 1988

"The Role of Fisheries in the Alaska Economy," Hartman, Baker, Dean, Mills, and Wolfe, from Alaska Fish and Game Magazine, Jan-Feb 1988, pp. 4-11.

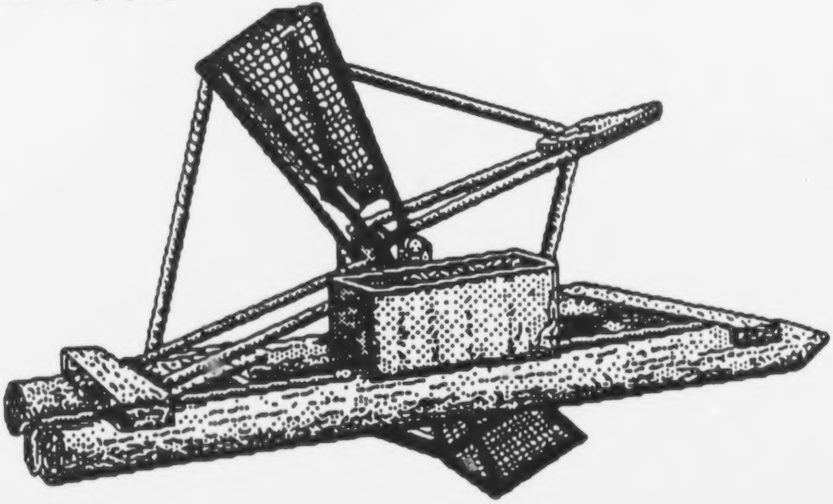
Economic Role of Self-Sufficiency

What is the economic importance of self-sufficiency in the village economy?

As noted above, the Alaska Department of Fish and Game credits subsistence with providing over 40 million pounds of food to rural subsistence-using Alaskans each year. Although some food items like flour are cheap, other foods such as smoked salmon or scallops can cost $10.00 a pound or more from a store. Many of Alaska's subsistence resources are high-protein, quality products like salmon and caribou. Imagine the value of 40 million pounds of food! Additionally, think of all the supplemental values of a salmon in the freezer, moose steaks on the grill, or berries on the ice cream in Alaskan urban areas! Alaska's subsistence resources have a possible value in the hundreds of millions of dollars.

As noted by the Alaska Department of Fish and Game, "Subsistence provides high quality, nutritional foods to people living in rural areas. Wild fish and game is about one-third higher in protein than store-bought domesticated red meats, and the oils from fish and sea mammals are healthy and efficient sources of quick body heat for people in cold northern climates.

" Because jobs and income are limited and unstable in rural communities, subsistence fishing and hunting play important stabilizing roles in the rural economy. When money is scarce, people continue to rely on wild foods and materials to help support families. Whereas fewer store foods may be imported to rural areas because of restrictions in incomes, wild foods are accessible for families with the labor and equipment to harvest them. Subsistence is likened to an economic safety net which softens the fall for rural areas when jobs are few." ("The Role of Fisheries in the Alaska Economy," p. 5)



What is the economic importance of viable village economies to the Alaska economy?

Economically viable villages can very much contribute to Alaska's overall economy. In fact, in 1988 it is Alaska's small and medium size communities which, according to the State Department of Labor, are largely responsible for improving employment figures. It's hard to tell how much of the economy in those small and medium-sized communities is backed up by subsistence and other forms of self-sufficiency. Alaska's self-sufficiency resources directly supports the economy by providing basic needs of life such as food, shelter, clothing, and fuel, and indirectly by supplementing resources purchased in the cash economy.

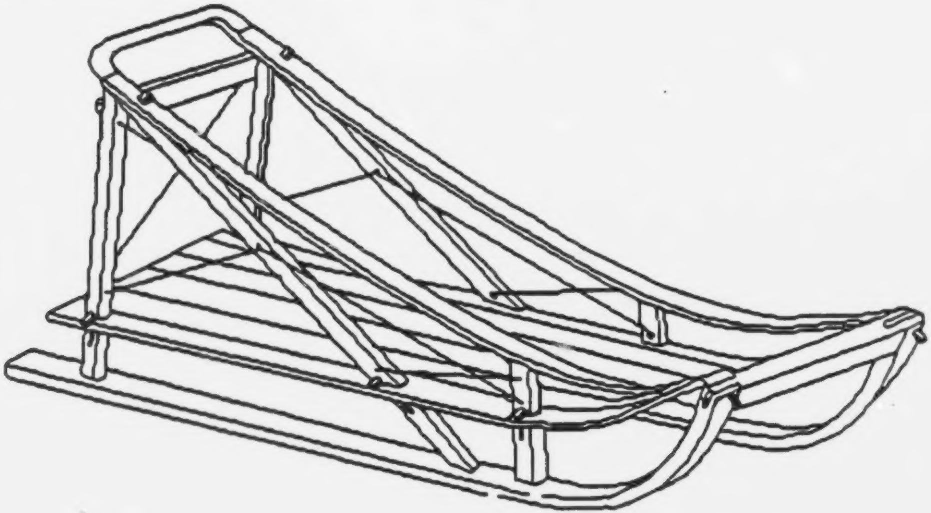
What are the costs of self-sufficiency on the Alaska economy?

Costs of subsistence or self-sufficient lifestyles on the Alaskan are slight. Those lifestyles provide a self-supporting safety net. Some of those subsisting on the resource or those pursuing a self-sufficient lifestyle might be utilizing fish or other resources which might have been harvested by a commercial fisherman, or they may have taken game which a big-game guide could have assisted a client in taking. To the person gaining that resource, the prize might be thought of as a right. The person who loses out on the fish or game might feel cheated. To the objective viewer, however, the cost to the economy appears negligible because human beings benefit.

One cost of any resource management program is the cost of studying the resource and implementing regulations. Government itself is the largest employer in the state of Alaska. Overseeing the natural resources in Alaska, including subsistence resources, has costs. Increased competition usually means increased costs of regulation and implementation. There's no free lunch.

What are sharing and distribution networks?

Historically, subsistence resources were divided through sharing and distribution networks. Many who live self-sufficient lifestyles share and distribute their labor or products in much the same manner. The Euro-American lifestyle is a cash economy in which goods and services are exchanged for pieces of paper which represent value. Sharing and distribution networks are ways to exchange goods and services without the exchange of money. For example, when a whale is brought into certain northern Alaskan villages, the whale does not belong personally to the person who killed it–the whale belongs to the village. Everyone assists in preparing the whale and everyone receives whale meat or blubber in return.



Understand Competing Uses

Competing Uses
Teacher Page

Competency: **Understand current competing uses of Alaska's self-sufficiency resources**

Tasks:
Explain Native versus non-Native uses of Alaska's self-sufficiency resources
Explain sports and commercial fishing versus self-sufficiency fishing
Explain the issue of international high seas fishing versus self-sufficiency fishing
Explain the issue of International Whaling Commission control of whaling
Explain the issue of state control of whaling

Introduction

Competition is intensifying for Alaska's fishery resources. The Japanese economy is booming, supporting a growing fleet that harvests salmon returning to Alaskan waters. Meanwhile in the U.S., eating habits have swung to favor seafood, increasing the demand for U.S. commercial catches. In addition the visitor industry brings more sports fishermen to the state. As any Alaskan fisher can vouch the fishing resource reflects this scramble. Increasing competition invites increasing governmental regulations and management which may impact the self-sufficiency lifestyle.

Overview

It's hard to imagine that competing uses can provide employment for Alaskans, but indeed many jobs deal with competing uses of resources. Many feel that local management is one element of competing uses so often overlooked. Biological, social and management skills including university training, will increase employment opportunities related to that management. The Alaska Department of Fish and Game, U.S. Fish and Wildlife Service, National Park Service, Bureau of Land Management, Native and other management groups have or need to have a strong interest in local hire, which will likely increase employment opportunities for those directly affected by their policies.

Suggested Learning Activities

1. Alaska Wildlife Notebook Series and Alaska Wildlife Notebook Series Activities Guide for Teachers: Simulation of a hearing of the Alaska Board of Game, illustrating how managers must provide for the needs of competing user groups , p. 42; Simulation of a hearing regarding the management of seal harvest, p. 66; Human effects on walrus, p. 71; Simulation of a hearing on changes in migratory waterfowl treaties, p. 89
2. Write to the Alaska Eskimo Whaling Commission, the Eskimo Walrus Commission, the International Whaling Commission, and the National Marine Fisheries Service to find out how well the management of whales and walrus is succeeding as federal and Native groups continue to work together . OR: invite representatives from these agencies as well as subsistence and self-sufficient users and fishermen, to conduct a panel discussion or debate on this issue.
3. Project Wild contains numerous activities related to conflicting uses of natural resources. These activities include:
   "We're in This Together!" ("students interview people to identify environmental problems, and then analyze, interpret, and summarize their findings.")p. 135. "Wild Bill's Fate," ("students investigate pending

legislation affecting wildlife, compare social and political viewpoints") p. 143; "When a Whale is a Right," ("students hold a hypothetical meeting of the International Whaling Commission, evaluate the possible impact of wildlife issues on alliances and other relationships between and among nations.") p. 149; "Changing Attitudes" ("Students design and conduct community interviews, describe factors which may influence a change in attitude.") p. 165; "To Zone or Not to Zone," (Students role-play a meeting of a county commission pertaining to a land-use issue, identify social and ecological considerations where human uses of land conflict with each other...") p. 177; "Cabin Conflict," ("Students participate in a role-playing activity, describe possible circumstances in which public and private interests may conflict...") p. 185.

Resources

Alaska Eskimo Whaling Commission, P.O. Box 570, Barrow, AK 99723

Bureau of Land Management, 701 C Street, Box 13, Anchorage, AK 99513

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802

Eskimo Walrus Commission, P.O. Box 948, Nome, AK 99762

Greenpeace, Box 104432, Anchorage, AK 99510. *Strong advocates for whale and other marine mammal conservation.*

International Whaling Commission, The Red House, Station Road, Histon, Cambridge, CB4 4NP, England, U.K. *International agency which regulates whale harvest and conservation.*

National Marine Fisheries Service, 709 W. 9th St., Juneau, AK 99801

National Park Service, Alaska Region, 2525 Gambell St., Anchorage, AK 99503

Nunam Kitlutsisti, P.O. Box 2068, Bethel, AK 99559 (907) 543-2856-*The environmental and research arm of the Association of Village Council Presidents, the official representative body for the fifty-six Native villages of Alaska's Yukon-Kuskokwim Delta region.*

Rural Alaska Resources Association, c/o RURALCAP, P.O. Box 200908, Anchorage, AK 99520. *Newsletter dealing with subsistence issues.*

U.S. Fish and Wildlife Service, Alaska Region, 1101 East Tudor Road, Anchorage, AK 99503

Books and Magazines:

Alaska Whales and Whaling, Alaska Northwest Publishing Company, 137 East Seventh Ave., Anchorage, AK 99501, 1988

"The Role of Fisheries in the Alaska Economy," Hartman, Baker, Dean, Mills, and Wolfe, from Alaska Fish and Game Magazine, Jan-Feb 1988, pp. 4-11.

"Marine Mammals: A New Era?," Lloyd Lowry, from Alaska Fish and Game Magazine, Nov-Dec 1987, pp. 29-32.

Competing Uses

Why is there a controversy regarding Native versus non-Native uses of Alaska's self-sufficiency resources?

With thousands of years of heritage in the state, Alaska's Native people are deeply invested in subsistence and self-sufficiency lifestyles. Some of these lines are drawn less rigidly in Alaska than in other parts of the world, but for Alaska's Native people subsistence resources used for self-sufficiency have great meaning. Evidence proves that Native people have inhabited Alaska for over 10,000 years. Their kinship with the resource is beyond question. For this reason many Native organizations involve themselves significantly in subsistence issues. Other users find that involvement threatening to their own use of resources.

What is the conflict between sports and commercial fishing and self-sufficiency fishing?

A number of forces compete for Alaska's fishing resource. Those who fish for subsistence harvest 40.3 million pounds of food annually, with two-thirds of that harvest composed of fish and shellfish. Rural Alaskans consume about 230 pounds of fish per person per year. Fish used for subsistence include salmon, halibut, char, cisco, broad whitefish, pike, sheefish, and Alaska blackfish as well as abalone, cockles, chitons, sea cucumbers, sea urchin eggs, and herring roe. ("The Role of Fisheries in the Alaska Economy, p. 5)

The same article notes the diversity and growth in the Alaskan commercial fishing industry. Salmon fishing dominates the commercial industry–salmon is the number two export from Alaska after oil. The market for herring roe opening up in the 1970s brought enormous growth in that fishery. Halibut, a historic fishery, is of such commercial value that it is controlled by international agreement. Groundfish harvest has grown tremendously, enhanced by joint venture harvests with other countries. Finally, shellfish, including shrimp, king, dungeness and tanner crab, scallops, oysters and sea urchins represent over 180 million dollars in revenue annually.

Sport fishing is very important in Alaska. The Sport Fish Division of the Alaska Department of Fish and Game was formed with statehood. Last year ADF & G estimated that 370,000 anglers fished in Alaska. Though estimates vary on the commercial value of the fish they caught, it is less than the other users. But sports fishing has clout–economic, and political. Economically these people contribute considerably to the Alaskan economy. ADF & G estimates state that for 1986 sports sports fishing expenditures were over $200 million with gross business revenues of over $350 million.

All three groups have an interest in catching fish–the self-sufficiency user for food, the commercial user for income, the sports user for sport. For years considerable debate has taken place regarding the relative values and protection of each of these uses. Federal and state laws protect each, but the ongoing debate continues.

What is the issue of international high seas fishing versus self-sufficiency fishing?

The issue of international high seas fishing versus self-sufficiency fishing is overshadowed by the issue of international high seas fishing versus trolling, seining and gill net commercial fishing in Alaska. High seas fishing, taking fish in giant nets outside of U.S. waters, affects both commercial and subsistence (and self-sufficiency) catches. High-seas fishery management, long simply left to the discretion of those fishing, is an everyday topic of concern in Alaska. What about high-seas intervention of salmon? Do the fish belong to those who live where they originated? Who has rights to fish on the high seas? Foreign fishing in Alaskan waters is governed by the Magnuson Fishery and Conservation Act of 1976. The U.S. Fishery Conservation Zone established by the act extends from 3 nautical miles from shore to 200 nautical miles from shore. In addition, the act provides for exclusive management authority over continental shelf fishery resources and anadromous species (those which mature in the ocean, then ascend streams to spawn in fresh water) beyond the 200-mile limit, except when they are within any recognized foreign nation's territorial sea. (Alaska Almanac, p. 92) What about those taken on the high seas? Shouldn't further international agreements specify to whom the fish belong? What about those who depend on that fishery resource for food? What about commercial users? These questions and more are the daily fare of fish managers.

What conflicts have arisen concerning the International Whaling Commission control of whaling ?

As noted in the **Alaska Almanac**, "Bowhead whales have been protected from commercial whaling by the Convention for the Regulation of Whaling of 1931, the International Convention for the Regulation of Whaling of 1947, the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973 and the Convention of International Trade in Endangered Species of Wild Fauna and Flora. Commercial whaling for gray whales has been banned by the International Convention for the Regulation of Whaling since 1947. These conventions and acts have, however, allowed for a subsistence harvest by Alaska Indians, Aleuts and Eskimos.

"Since 1978, the International Whaling Commission has regulated the take of bowheads by establishing an annual catch limit for Alaska Eskimos. Also in 1978, the IWC reclassified the eastern stock of gray whales from a protected species to a sustained management stock with an annual catch limit of about 179 whales, based on the average known removals during the period 1968-77. The entire catch limit has been reserved for taking by Natives or by member governments on behalf of Natives. Other species of large baleen whales, such as minke and fin whales, are occasionally taken by Alaska Eskimos for food. The only toothed whale taken by Eskimos is the beluga and its harvest is managed by the state." (Alaska Almanac, p. 237)

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What about the issue of state control of whaling ?

Upon statehood, marine mammals came under the jurisdiction of the Alaska Department of Fish and Game (ADF & G). The Marine Mammal Protection Act (MMPA) of 1972 though, turned that control of marine mammals over to the federal government. That act gave management of polar bears, walruses, and sea otters to the U.S. Fish and Wildlife Service and placed the management of seals, sea lions and whales in the hands of the National Marine Fisheries Service. Though the act allows for control of management of these mammals to revert to the states, the process is not so easy. Just after passage of the act, the state requested that control revert to the state. In 1976 management of walruses was returned to the state, then went back to the federal government in 1979. As Lloyd Lowry noted in "Fish and Game Magazine:"

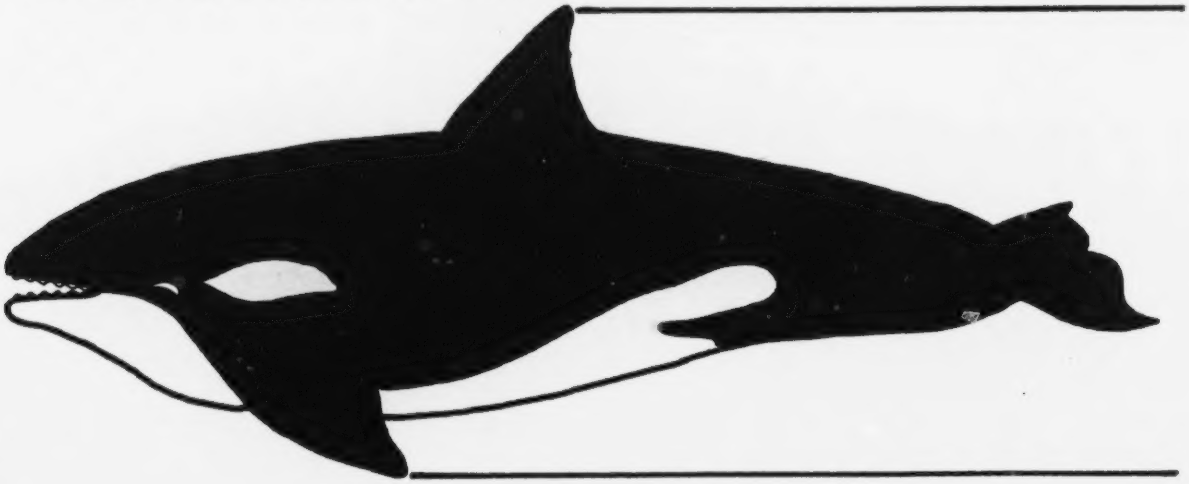
"Five criteria were used to recommend which, if any, marine mammal species should be managed by the state. They were:

- Are populations healthy and within optimum sustainable population (OSP)?
- Do conservation issues exist which can be addressed by state management?
- Could a state management program be effective?
- Is there public support for state management?
- Is a state management program economically feasible?

"Based on these criteria, ADF & G recommended that a state program is feasible for three species: polar bears, walruses, and sea otters." ("Marine Mammals: A New Era?", p. 30)

As Lowry notes in the same article, some have perceived the issue of state control of marine mammals (including whales) as a "state versus federal" issue, but the issue involves economics. For example, which agency should pay for expensive research? The cooperative management arrangement between the Eskimo Walrus Commission and the USFWS evolved. Similar cooperative arrangements between governments and local managers or among interest groups have taken place between the North Slope Borough Fish and Game Management Committee and the Inavialuit Game Council (which represents residents of the western Canadian Arctic) regarding management of Beaufort Sea polar bears.

Whales are a sensitive and emotional issue. Though the harvest of whales represents an important food source and feature of cultural identify for Bering and Beaufort Sea Eskimos, these giant docile creatures are the focus of increasing attention by governments and environmental groups. Greenpeace, for example, takes radical stands concerning protection and conservation of whales. Though the state doesn't manage whales, and in the foreseeable future probably won't, today, the Alaska Department of Fish and Game works with federal agencies to develop management plans for all the marine mammals.



Potential Uses of Alaska's Self-Sufficiency Resources

Teacher Page

Competency: **Understand potential uses of Alaska's self-sufficiency resources**

Tasks: Explain under-utilized Alaskan self-sufficiency resources such as:

- a. fresh water
- b. bottom fish
- c. peat
- d. coal
- e. berries
- f. other wild edible plants

Introduction

The Great Land is a rich land. Not only is Alaska largely undeveloped, but it is also important for self-sufficiency because of its plentiful, though fragile riches. Self-sufficiency has the potential to impact wildlife or other resources. It also offers a cleaner, more self-determining lifestyle.

Overview

Employment potential related to Alaska's underutilized self-sufficiency resources has great potential. Anyone in the business of selling wood stoves (biomass fuel is a very underutilized self-sufficiency resource in Alaska) can tell you that inquiries are increasing. Solar devices, gardening, gathering, alternative fuels provide sources of employment in sales, installation, and service, not to mention the home employment related to a self-sufficient lifestyle.

Suggested Learning Activities

1. Brainstorm about underutilized Alaskan resources.
2. Invite people to class who are putting underutilized resources to use - OR- visit people who are doing so. Observe their routines, activities, methods, equipment, and products. Find out some of the benefits of their ideas in terms of economics, convenience, comfort, etc.
3. Choose one underutilized resource and design and implement a project to use that resource.

Resources

Bureau of Land Management, 701 C Street, Box 13, Anchorage, AK 99513

Division of Subsistence, Alaska Department of Fish and Game, Box 3-2000, Juneau, Alaska 99802

National Marine Fisheries Service, 709 W. 9th St., Juneau, AK 99801

National Park Service, Alaska Region, 2525 Gambell St., Anchorage, AK 99503

U.S. Fish and Wildlife Service, Alaska Region, 1101 East Tudor Road, Anchorage, AK 99503

Books:

Energy in the Great Land, *Alaska Energy Education Series,* Vocational Materials Library, Office of Adult and Vocational Education, Alaska Department of Education, Box F, Juneau, AK 99811. *Also available at extension offices.*

Root, Stem and Leaf: Wild Vegetables of Southeast Alaska, by Glen Ray, South East Regional Resource Center, 210 Ferry Way, Juneau, AK 99801. *Soon to be reprinted.*

Wild Edible and Poisonous Plants of Alaska, Cooperative Extension Service, University of Alaska, 1976.

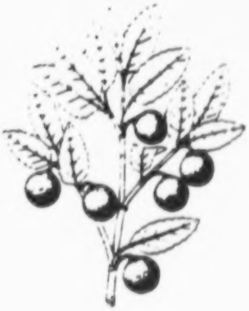
Potential Uses of Alaska's Self-Sufficiency Resources

What are under-utilized Alaskan self-sufficiency resources?

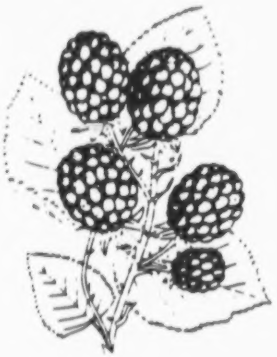
Alaska has a wealth of resources, many of which are underutilized. For example, the state has great lakes, rivers and glaciers, providing enormous quantities of fresh water.

An Alaskan who has seen fish markets in Europe or the Orient knows that a fish an Alaskan would throw back would be a valued food source elsewhere. Alaska's commercial bottomfish industry, until recent times of inconsequential economic importance, is today a thriving industry.

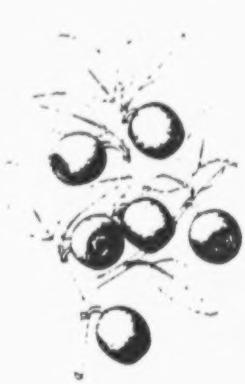
Alaska has an estimated 27 million acres of peat. Though peat is hardly used as a fuel in Alaska, it's an important source of energy elsewhere in the world. Setting environmental concerns aside, if Alaskans used peat to heat their homes, the state would have enough peat for centuries of home heating. Some Alaskans already use coal for self-sufficiency. They pry coal from hillsides or, on the Kenai peninsula, pick it off the beaches. Though Alaska's coal is relatively low in heat value (BTUs), it is also plentiful and low in pollutants. As stated in **Energy in the Great Land**, Alaska probably has a coal resource "approaching 200 billion tons. At the rate that Alaskans utilize energy at the current level, **that is enough energy to last 15,000 years.**" (Energy in the Great Land, p. 26)



Blueberries



Currants



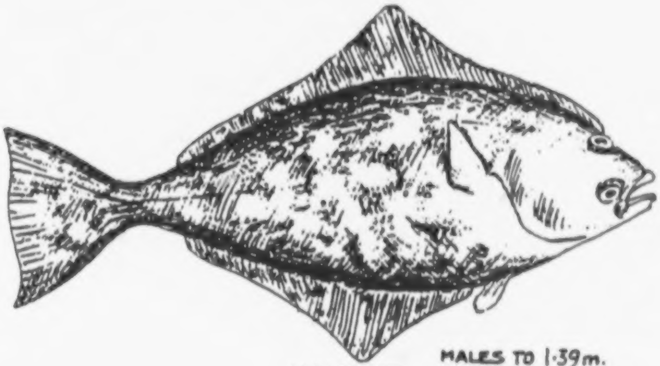
Cranberries

Blackberries

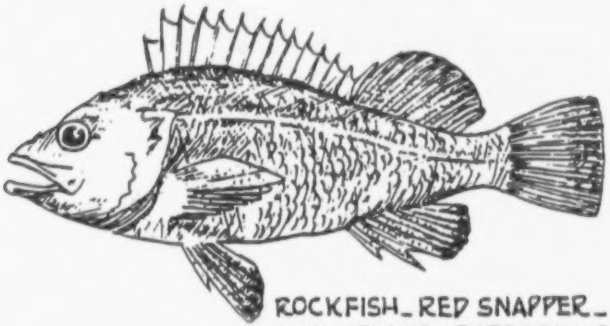
Many Alaskans make use of berries for food. The state has a wealth of wild berries, from salmonberries to nagoonberries to blueberries and huckleberries. Some Alaskans can wild berries and sell them. Others can and freeze berries for use all winter. Other wild edible plants include various seaweeds, roots, stems and leaves. Techniques for gathering these materials vary, of course, and a number of guidebooks concerning their use are available. Locals have information concerning plants in their area.

Alaska has, as part of the U.S., adopted the mass economy of the U.S. Some Native economies are partially or largely self-sufficient, depending on the resources in their area. Alaska's diverse resources have the potential to contribute in many more ways to the livelihood of Alaskans.

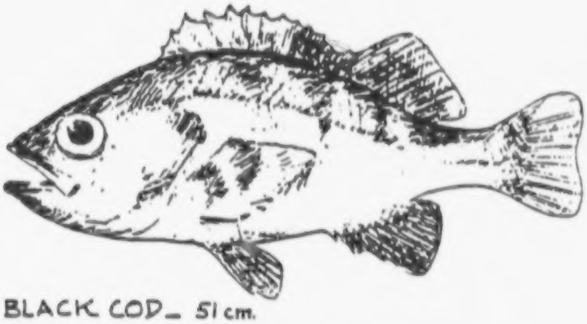
During the Second World War Americans were encouraged to do their part for the war effort by growing a Victory Garden. The concept of the Victory Garden was that with yards and terraces in cultivation and those at home doing the cultivating, the ensuing self-sufficiency would free people and energy tied up in raising food for the war effort. In a similar manner, fuel, energy and environmentally efficient self-sufficiency can greatly contribute to economic and social well-being.



MALES TO 1·39m.
HALIBUT_ FEMALES LARGER
HIPPOGLOSSUS STENOLEPIS



ROCKFISH_RED SNAPPER_TO 91cm
SEBASTODES RUBERRIMUS



BLACK COD_ 51cm.
SEBASTODES MELANOPS